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SURFACE MINING

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HEARINGS BEFORE THE SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

Pursuant to S. Res. 45
A National Fuels and Energy Policy Study

NINETY-SECOND CONGRESS

FIRST SESSION

ON

S. 77, S. 630, S. 993, S. 1160, S. 1240, S. 1498,
S. 2455 and S. 2777

PENDING SURFACE MINING LEGISLATION

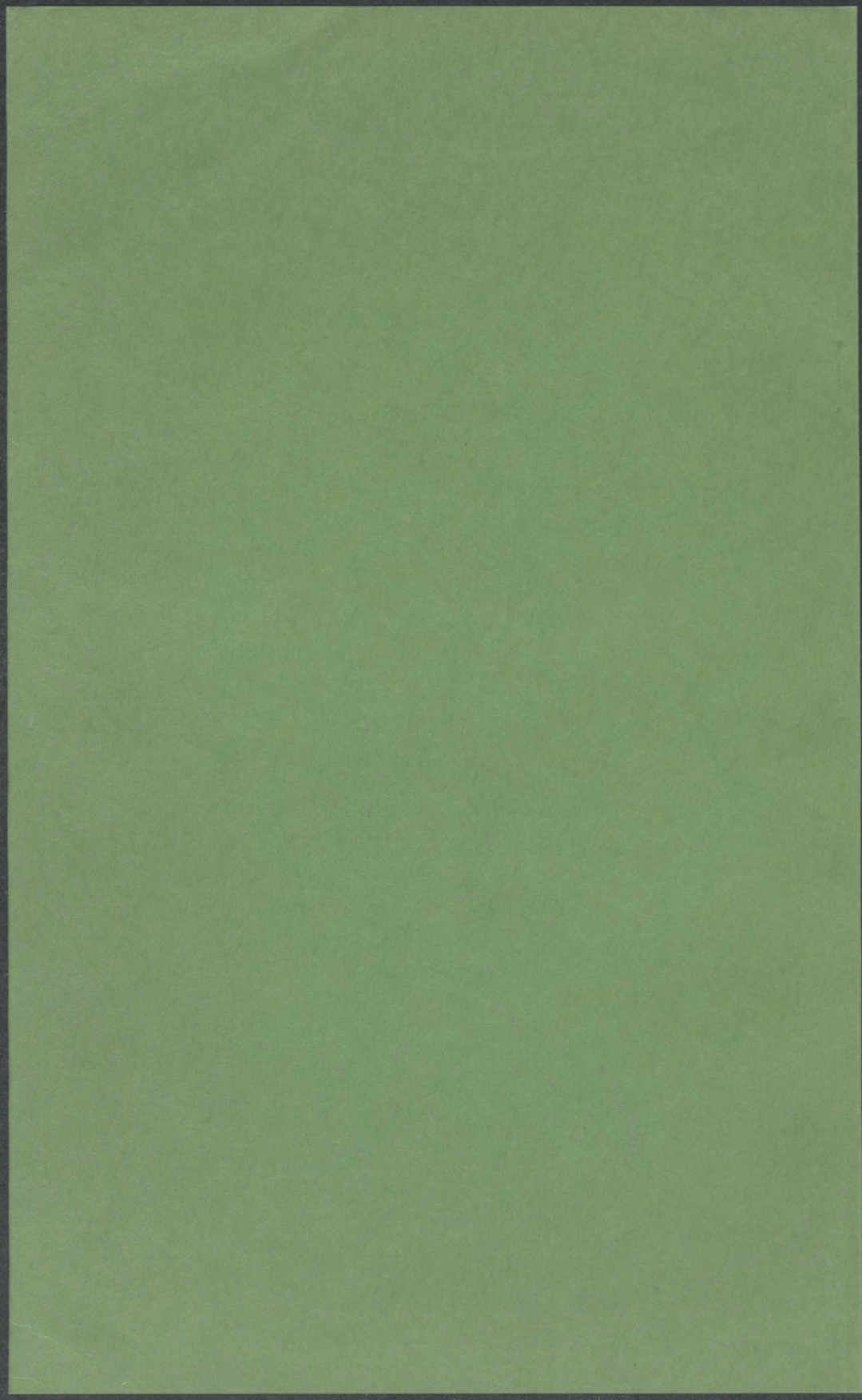
NOVEMBER 16, 17 AND DECEMBER 2, 1971

Serial No. 92-13

PART 2



Printed for the use of the
Committee on Interior and Insular Affairs



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U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1971

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(II)

CONTENTS

STATEMENTS

	Page
Baker, Hon. Howard H., Jr., a U.S. Senator from the State of Tennessee...	579
Charter, Mrs. Boyd, representing The Bull Mountain Landowners Association of eastern Montana.....	648
Cooper, Hon. John Sherman, a U.S. Senator from the State of Kentucky...	571
Darby, Sanford, director of the Georgia Surface Mined Land Use Board...	626
Dole, Hollis M., Assistant Secretary, Mineral Resources, Department of the Interior.....	591, 601
Hansen, Hon. Clifford P., a U.S. Senator from the State of Wyoming...	590, 614
Hurst, Dr. Robert E., technical director, Dowell Division of the Dow Chemical Co., accompanied by Jake Stewart.....	606, 614
Johnson, Mrs. Vera-Beth, representing The Bull Mountain Landowners Association, Roundup, Mont.....	643
Kaufman, Paul J., director of the Appalachian Research and Defense Fund	652
McGlothlin, James W., president of the Tri-county Independent Coal Operators	619
Randolph, Hon. Jennings, a U.S. Senator from the State of West Virginia...	603
Roberts, Irving, vice president for Corporate Planning of the Reynolds Metals Co.....	632
Unger, David G., assistant executive secretary of the National Association of Conservation Districts.....	623
Wright, A. T., staff consultant, Wilderness Society.....	636, 640

ADDITIONAL INFORMATION

Buchanan County Chamber of Commerce, resolution of.....	622
---	-----

APPENDIX

(Statements and communications were received from:)

S. 2777.....	823
H.R. 4556.....	845

STATEMENTS

Colorado Mining Association.....	786
Hagen, Bruce, North Dakota Public Service Commission.....	788
Harm, Ray, naturalist, Cumberland Mountains of southeastern Kentucky...	790
Little, George C., Jr., Southeast representative of the Izaak Walton League of America.....	780
McDowell, Cloyd D., president, National Independent Coal Operators' Association	775
Miernyk, William H., Benedum Professor of Economics and director, Regional Research Institute, West Virginia University.....	777
Miller, Hon. Clarence E., a U.S. Representative in Congress from the State of Ohio.....	787
National Clay Pipe Institute.....	784
Peelle, Robert, representing Tennessee Citizens for Wilderness Planning...	770
Pfister, Ellen Louise, Jackson, Miss.....	876

IV

	Page
Reining, Don, executive secretary, Southern California Rock Products Association -----	795
Exhibit A—Summary of landfill operations in Los Angeles County, 1948-1969 -----	809
Exhibit B—Senate Concurrent Resolution No. 89 -----	813

COMMUNICATIONS

Fedje, Hyrum B., executive director, Rock Springs Urban Renewal Board : Letter to Senator Hansen -----	815
Lees, John N., Jr., Wauwatosa, Wis. : Letters to—	
Senator Nelson -----	821
Senator Jackson -----	821
Senator Proxmire -----	821
Lincoln, David C., president, Bagdad Copper Corp. : Letter to Representative Steiger -----	767
Peplow, Edward H., Jr., executive secretary, Arizona Mining Association : Letter to Senator Jackson -----	768
Teske, A. J., secretary, Idaho Mining Association : Letter to Senator Moss -----	785
Wataha, Paul J., mayor, city of Rock springs, Wyo. : Letter to Senator Hansen -----	815

ADDITIONAL INFORMATION

Cooper, Hon. John Sherman, material submitted :	
Kentucky Department of Natural Resources (research information), table -----	655
Strip mining in Berea, Ky., excerpt from Congressional Record, July 1, 1970 -----	655
Nunn, Hon. Louis B., Governor of the Commonwealth of Kentucky ---	656
"Only a Big Change in Attitudes Can Make Coal Mining safe," from the Courier-Journal, February 14, 1971 -----	658
"Cooper Criticizes Mine's Mureau's Safety Activities," by Ward Sinclair, from the Courier-Journal, September 9, 1971 -----	659
"Stripping Gains: Deep Mines Losing Coal Sales Battle," by David V. Hawpe, from the Courier-Journal, September 9, 1971 -----	660
Hylbert, David K., department of geosciences, Morehead State University, report to the Kentucky Coal Mine Research Institute -----	663
Wagner, Aubrey J., chairman, board of directors, Tennessee Valley Authority : Letter to Senator Cooper -----	706
TVA term coal contract reclamation provisions—as revised December 1970 -----	707
Kentucky revised statutes relating to strip mining and reclamation, chapter 350, 1966 -----	709
Regulations of the Kentucky Department of Natural Resources concerning strip mining, adopted by the Strip Mining and Reclamation Commission -----	756
Incomplete list of urban areas where mining has occurred and where it may be necessary to make specific studies to determine subsidence potential -----	815
Senate Concurrent Resolution No. 89, by the Senate of the State of California, relative to mineral reserves and reclamation of mineral lands. ---	813
"Wyoming's Sinking City," by Zeke Scher, from the Denver Post, November 28, 1971 -----	817

SURFACE MINING

THURSDAY, DECEMBER 2, 1971

U.S. SENATE,
SUBCOMMITTEE ON MINERALS, MATERIALS, AND FUELS
OF THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 3110, New Senate Office Building, Hon. Frank E. Moss (chairman of the subcommittee) presiding.

Present: Senators Moss, Allott, Hansen, Stevens, Fannin, Jordan of Idaho, Byrd of Virginia, and Randolph.

Also present: Mary Jane Due, special counsel; Charles Cook, minority counsel; and Tom Nelson, assistant minority counsel.

Senator Moss. The subcommittee will come to order.

We are continuing our hearings on surface mining legislation before the committee, a number of bills, including S. 1160 and S. 1240.

This is a continuation of hearings that began on the 16th of November, continued through the 17th, on surface mining legislation. We are going to hear testimony today specifically directed to 1160 and 1240, and in addition we will hear those persons who wished to testify in November on the more general aspects of surface mining legislation, but whom we were unable to accommodate because of the great number of witnesses that we had wishing to testify on the earlier dates of the hearing.

We have a number of very important and interesting witnesses to hear today. Our first will be our colleague, the Honorable John Sherman Cooper, the Senator from Kentucky, who has a great knowledge and interest in the problem of surface mining, since he comes from one of our great coal-producing States, and one in which the problem of surface mining has been under discussion for quite some time.

We are glad to have you, Senator Cooper, and you may proceed, sir.

STATEMENT OF HON. JOHN SHERMAN COOPER, A U.S. SENATOR FROM THE STATE OF KENTUCKY

Senator COOPER. Senator Moss, and members of the subcommittee, I appreciate very much the opportunity to appear before this committee, as it considers legislation for the regulation, control, or prohibition of surface mining, and to speak on a subject of such great importance to the Nation—and especially to my own State of Kentucky, and to all coal-producing States.

This subject includes the contour mining or steep slope stripping which is typical of mountainous and hilly areas, as well as the area mining practiced on flat or rolling terrain. Both contour and area surface mining are practiced in Kentucky.

I will not attempt to go into great detail about the proposal I shall make today, because I know the time of the committee is limited. I will submit it for your consideration during the preparation of whatever legislation you may recommend to the Senate.

I was very happy to join in the sponsorship of S. 993, introduced for the administration by the chairman of the full committee, Senator Jackson, and the ranking minority members, Senator Allott.

The administration bill has, I believe, great value as the initiative of the administration, and in establishing a national policy to deal with the subject of surface mining. The President is to be commended for his leadership and initiative in this field. I believe he is the first President who has taken this initiative and leadership.

However, I believe the administration bill can be improved in several important respects. Since it has been introduced, I have given thought to this proposal, and I believe that legislation can be enacted which will effectively work toward this objective; that is, to regulate surface mining.

In studying this matter, I have consulted with my colleague, Senator Baker of Tennessee, for the problems of our States of Tennessee and Kentucky are similar and we have found ourselves in general agreement. His thorough study has contributed in great part to the recommendations I make.

They say in addition to being a fine lawyer, one who has contributed much to the study of environmental problems in the Senate on public works, he was also an engineer before he became a lawyer. We hope much to be able to submit a bill embodying our joint proposals.

In preparing the recommendations that I make today, I have relied very heavily upon the experience of the Senate Committee on Public Works—in the preparation of the Clean Air Act Amendments of 1970, which have been enacted by the Congress, and the Federal Water Pollution Control Act Amendments of 1971, which have been approved by the Senate and I am sure they will be approved by the Congress in the early part of next session.

At the outset, we must consider the position of many organizations and citizens who urge that surface mining be prohibited. As I will note later, I think it clear that strip mining should be prohibited in certain areas; for example, those over a certain steepness of slope, or when it would violate water quality requirements established by law. But I do not favor complete prohibition of surface mining. I cannot do so because, realistically, coal production is needed.

It is well known that the difficult question of provision of energy, sufficient to meet the Nation's needs, is a critical one. Energy demands have increased dramatically in recent years, and are expected to continue to increase at a growing rate. Energy demands double every 8 to 10 years.

In effect, the use of energy is a measure of the well-being and standard of living of our people as well as of the changes brought by industrialization and urbanization.

I understand this subcommittee is conducting hearings at least in part under the authority of Senate Resolution 45, of which I was a cosponsor, providing for a national fuels and energy policy study, and I know the committee will make its report by 1973. I would hope that this report will address the whole question of levels of use of energy, available resources, and the costs—including environmental costs—of developing those resources, of converting them into energy, and of consuming that energy and the products to which it is in turn applied.

It may be, following such appraisals, that it will be found possible to shift away from strip mining to deep mining and the development of other resources.

Nevertheless, I think it important we do not wait until 1973 to take the necessary, if interim, steps for the regulation of surface mining.

It has been suggested, and in testimony before this committee, that alternate fuel sources of coal can be provided by other fossil fuels, by nuclear energy, and even by solar energy. Each of these fuels have problems—I leave off solar energy—both in the availability of resources and in the environmental impact of their recovery and conversion to energy, and I do not think they can be relied upon now to furnish the necessary energy requirements of the Nation.

I therefore favor the regulation of surface mining, and my remarks are addressed to this subject.

Strip mining for coal has grown from minimal proportions to become a major factor in coal production. In 1970, nationally, surface coal production totaled 264 million tons, or 44 percent of the total of bituminous and lignite production.

In Kentucky, 48 percent of coal production was produced by strip-mining methods—125.3 million tons. This figure, for Kentucky alone, represents better than 10 percent of the Nation's total production of coal in 1970, and more than 23 percent of the Nation's surface production.

Strip mining is expanding rapidly. Nationally, strip mining was 23 percent higher in 1970 than in 1969. In contrast, underground production decreased 2.4 percent between 1969 and 1970. Unless something is done and done quickly, the situation will be completely out of control, and vast areas have already been devastated, and, I think, have little hope of reclamation.

If surface mining is to be regulated rather than prohibited, the first question is whether Federal legislation is required, or whether the States shall maintain jurisdiction. I would like to praise my State—Kentucky—for I believe it is generally agreed that it has developed the outstanding State regulatory program in the Nation.

But, I have concluded that a Federal law is required for two reasons:

First, because the problems of providing energy and preserving the environment are national problems which require national policy.

Second, because regulation State by State introduces competition for markets which places a premium on low standards, and a statute that will be uniformly applicable is required in equity and fairness.

The question then arises of whether the regulation or surface mining should be administered solely by the Federal Government, or

should it be through a cooperative Federal-State relationship. With the experience of the recent Water Pollution Control Act, passed by the Senate 86 to 0, which restores State participation in water pollution control, and from my experience in other pollution control programs, I favor the Federal-State relationship.

The first proposal I make is that a bill to control strip mining should be enacted quickly, and must deal with time elements. I believe the procedures which I have incorporated in this proposal, which we are drafting and expect to introduce, is more definite and would secure quicker action than S. 966.

Senator Baker and I have concluded that the proper agency for control would be the Environmental Protection Agency, cooperating with the Department of Interior's Bureau of Mines, and with the Forest Service and Soil Conservation Service of the Department of Agriculture and others.

In order to establish an adequate Federal-State regulatory program, it is necessary to provide time and orderly procedures, involving public participation. Our proposal has two phases.

Under the primary, prior and ultimate control phase, the Administrator of the Environmental Protection Agency would be required, after the model of the Clean Air Act and Federal Water Pollution Control Act, to promulgate criteria and guidelines for the control of surface mining activities, and to establish minimum requirements for the State regulatory program.

I cannot go into detail of the criteria. I think we know what cycling will be, dealing with the slope and prohibiting of pushing of the boil over the slope.

Following promulgation of these criteria and guidelines—which would be required within 6 months of date of enactment—the State would be given 6 months to adopt, after public hearings, and submit to the Administrator, a regulatory program which would be required to meet certain criteria set forth in the bill. Included in these criteria are requirements for permit programs.

If the Administrator determines that the State regulatory program meets the requirements of the statute, the State program would be approved. In the event the program is inadequate, the Administrator is given authority to substitute all, or a portion, of the regulatory program for the State. The entire procedure for the development of the regulatory program would consume 18 months, a time coincident with the period of the first phase.

Following the establishment of an effective regulatory program—either State administered and approved by the Administrator, or an EPA substituted program where the State program is inadequate—all persons, including those presently conducting surface mining operations, would be required to comply with the provisions of the regulatory programs.

The next important question, of course, is that of enforcement, and of what agency will be responsible for onsite monitoring, application of the practices required, and enforcement—including citation of violations and prosecution of penalties or mine closure.

I would propose that, as soon as Federal guidelines have been established, and there has been an opportunity for the States to develop

plans conforming to the Federal regulations, responsibility for enforcement should reside with the State. This would obviate the necessity of building a large body of Federal personnel to assure that the State carries out and enforces its responsibility.

My proposal would provide that the Environmental Protection Agency would have the authority not only to require adequate regulations for strip mining and enforcement, and to review and approve or refuse the State plans, and substitute their own plans for State plans, but would have the authority of ultimate enforcement if a State fails to act.

It has been suggested that the Bureau of Mines should have primary responsibility. My experience is that the Bureau of Mines functions first to encourage the production of coal, and second, above all, to insure safety. These functions are not the same as those concerned with the environment.

Surface mining is directly related to environmental quality, as well as the production of needed energy fuel. EPA is developing the techniques in the field of environmental protection, and it can more properly and effectively do so in this field. I may say Senator Baker advanced this view, and most persuasively, sometime ago.

Mr. Chairman, the heart of the regulatory program would be a permit system, which would provide that any person undertaking any surface mining operation would be required to give notification to the public and provide an opportunity for public hearings.

The State, or if appropriate the Federal Government, would issue or deny the permit. In the event the permit is issued, it would, of course, contain conditions on the operation of the mining activity, including performance standards and plans and performance bonds for the restoration and reclamation of the site.

We are very much interested in the document which your committee has issued noting the different proposals made throughout the years, and very much interested in finding one of the first proposals was made by Senator Dirksen in 1940 in the House, in which he said that it would be used as necessary to make the contour of the land approximately the same as before the mining operation was begun.

This procedure, establishing a system of primary State regulations, backed up, if necessary, and enforced by the EPA, would require 16 or 18 months to develop—6 months from enactment for the EPA to issue comprehensive guidelines and criteria to the States; 6 months for the State to develop its plan based upon the Federal criteria and guidelines, and then 4 to 6 months for the action of the EPA in approving or amending State plans.

I realize this could be done in 12 to 16 months rather than 18 months. This is what I want to bring to the attention of the committee. I have been speaking about the development of the State plans, with backup by the EPA, but this is what I want to emphasize very strongly.

A serious question arises about what will happen during this year and a half, or 2 years if the bill is not promptly enacted by the Congress. On the record, the expansion of strip mining in the past 2 years would indicate that the problems may by then be insuperable, beyond control, and large areas of our coal-producing States would be beyond the possibility of rehabilitation.

I therefore propose that during this interim period, surface mining be conducted only under Federal authority, with the approval of the EPA.

Our proposal would establish an interim Federal program, under Federal authority of the Environmental Protection Administration. Any person currently operating a surface mine, or proposing to initiate operations at a new site, would be required to file a plan with the EPA describing the method of operation, and the restoration program.

The Administrator of EPA would have to approve the plan if the operator is to continue operations, or initiate new operations. The Administrator would approve the plan only if he were assured that restoration is adequately provided for. Six months after enactment, no person could operate a surface mine except in compliance with the interim Federal controls and EPA approval.

This interim, exclusively Federal, program of control would be phased out upon the development of the more comprehensive regulatory framework with primary State responsibility, which I have outlined above.

This program we are proposing may seem drastic, and I think it is drastic, because it would mean within 6 months, unless every person operating comes into compliance, they will not be able to operate. But unless immediate action is taken to regulate effectively surface mining, those who desire to operate surface mines will certainly face the prospect of being prohibited from operation.

If the regulation of strip mining is not undertaken quickly, we will face the unhappily prospect of having not only our flat and rolling lands, but even larger areas of our hill and mountain lands, despoiled—and restoration may be impossible.

Mr. Chairman, I believe the outline I have just described would provide a sound basis for surface mine regulation.

Mr. Chairman, I want to address myself to one other factor, and then I want to go.

Mr. Chairman, I have been keenly interested in this subject and deeply concerned for some time.

I think it would be valuable for this committee, in considering this legislation, although it does not have the jurisdiction of the subject, to address itself to one of the primary causes for the increase in strip mining—the enactment of the Federal Coal Mine Health and Safety Act of 1969.

I was a cosponsor of the bill, and voted for it, and I approve most of its provisions. But when it was considered by the Senate in October 1969, I opposed that provision in the bill which abolished the long existing classification of underground mines as “gassy” or “nongassy” and classified all as “gassy,” whether or not they were, in fact, gassy.

I offered an amendment to maintain the classification which was debated for 4 days and although defeated by a vote of 45 to 31, I believe that many in the Senate recognized the problem that removal of the classification would create.

I pointed out in the debate that with respect to Kentucky's mines, its approximately 3,000 nongassy small mines were safer than the 392 large gassy mines—this is true of all other States—and that to require them to install the costly equipment necessary for gassy mines would inexorably drive the small nongassy mines out of business with no gain in safety for the miners.

My prediction has come true, unfortunately. Many have been driven out of business. More will be, and the safety record since March 31, 1971, the effective date of the new Coal Mine Safety Law, is worse. I predict in my statement on the floor in 1969 that the closing of these small mines would result in the expansion of strip mining.

Another consequence if my amendment is defeated, is strip mining of the small acreages at the tops of the hills, for they cannot be mined with permissible equipment economically. There is one way they might be mined, which is through strip mining. One who has flown over the areas and seen the country devastated by strip mining, and its effect upon the environment, know what I am talking about; conservationists in the Senate should know.

Unfortunately, this prediction is also true. This strip mining is going to continue unless there is more emphasis laid on deep mining.

I ask consent to submit to the committee a list of some of the regulations of the Bureau of Mines which do not contribute to safety, some which actually reduce the safety of the miners—regulations which should be repealed or modified, regulations which, as I have said, have driven and continue to drive the nongassy mines out of business.

The Bureau's enforcement procedure seems to rely chiefly on imposing fines in varying amounts for infractions of its regulations—mandatory fines without prior opportunity of an operator to be heard which is contrary to all our sense "due process" of law, and which has seemed to only confuse operators as to the safety measures they are required to take.

Since the first effective Federal Mine Safety Act, the act has contained a provision authorizing the Bureau of Mines to close mines when a condition of imminent danger exists. Several years ago when the Senate was considering a mine safety bill, I proposed that mines should be closed down when conditions that could lead to imminent danger existed, not waiting for imminent danger, until the conditions were abated.

This was adopted and is now found in section 104(c)(1). I don't think it has been used, though.

I think it would be well to abolish the uneven, unequal, perhaps arbitrary imposition of mandatory fines, use section 104(c)(1) to close down mines until the danger has been abated and when necessary and, wherever required, impose fines and penalties for failure to abate and with due process of law. This, in my view, would provide safety for miners and fairness to the operators.

I bring this to your attention because as I will make these proposals to the Senate Committee on Labor, and your interest would be of great value.

Mr. Chairman, I would like to file a few exhibits to be included in my statement: one showing the increase in surface mining since the adoption of this act, and some statements of the Governor of Kentucky on this subject; a statement by TVA on their practice of strip mining which was not very successful.

Thank you for your patience. I see my colleague, Senator Baker, here, and I must say I owe a great deal to him in working out this proposal. We worked out what we believe is a fair proposal, one which is proper, and then tried to work a system which will be effective and successful.

Senator Moss. Thank you very much, Senator. The exhibits that you ask to be filed may go in the record. In your statement you re-

quested consent to submit a list of some of the regulations of the Bureau of Mines which do not contribute to safety, and some that actually reduce the safety of miners. If you wish to submit such a list, this committee will be glad to receive them, and they can be printed in the record.

We are concerned about that problem of mine safety, although you indicated the Committee on Labor will take this up. We may also want to take a look at it and see whether any action is required here.

I appreciate your statement and your suggestions that the urgency is so great that you recommend that we begin at once exercising control by requiring a permit from the Federal authority to continue surface mining while we get in motion the system that you described, which you think would be optimum.

Indeed, there is an urgency on this surface mining problem, urgency from two sides. First, we need the increased energy, and we have had to turn more and more to coal as our sources of energy decline. Second, we must find some way to obtain the energy without despoiling our land and water ecology generally. This is a problem to be solved and I am pleased to have you speak on it.

Senator COOPER. Mr. Ray Harm of Kentucky has asked me to submit a statement, and I would like to submit it for the record.

Senator MOSS. That will be submitted and will be printed in the record.

Senator HANSEN has a question.

Senator HANSEN. Senator Cooper, first of all, let me thank you for your excellent presentation this morning. I am impressed with your understanding and knowledge of the problems to which you have addressed yourself.

I gather what you are proposing is a continuation or an extension of the Federal-State regulatory relationship with the proviso that in the event that State regulations are inadequate or they don't measure up or get the job done as you feel it should be done, the then Federal standards would supercede those of the States, and Federal controls would be implemented. Is this general understanding correct?

Senator COOPER. That is correct. Instead of saying continuous Federal-State relationships, I would say continuous State, but until that is established, Federal control.

Senator HANSEN. My question is: You spoke out against Federal controls which classified all underground mines as gassy. Does this square with your first statement?

Senator COOPER. I spoke out against that provision in the Mine Safety Act which was adopted in 1969, which removed the long classification of gassy and nongassy matter, to classify them all to gassy whether or not they were gassy or not. And the result of that was to require these small nongassy mines—they are above the water level—the machine does not even exist—to close the mines down—machinery they could not economically use, and it would drive them all out of business.

This strip mining has made no sense at all, has not contributed anything to safety. There have been more injuries and fatalities since the adoption of that line.

Senator HANSEN. Some of the witnesses we had earlier, a week or two ago, testified that on the basis of tons of coal produced, the inci-

dents of accidents in a strip mine was only about one-sixth as much as it was in underground mines.

Senator COOPER. I would guess that strip mines and surface mines would be smaller incidents of injuries than in the deep mining. Deep mining is dangerous, no question about it.

Senator HANSEN. I gathered in the second part of your testimony that you are inveighing against Federal legislation which had arbitrarily declared all mines as gassy mines. Would you not think that if we were to impose Federal guidelines over all of the strip mining throughout the United States we might find situations which would not be unlike that to which you complain in your statement? This is my point.

Senator COOPER. I have just said that my—Senator Baker, one of the chief architects of the bill, we are going to hear from him. Ultimately we have Federal-State relationships with the enforcement on State. I don't think we have the same problems with the surface mining as we have had with deep mining. I want to say ever since I have been here, I think—no, I know something about these mines. I live in the eastern part of Kentucky. I worked outside of the mines one summer, and I know how they work. I worked on all of these mine safety regulations.

They impose these arbitrary penalties which do not contribute to safety, and the Bureau of Mines has not done a good job on this in my view, and we have to get it in the hand of somebody that understands the problems.

Thank you very much.

Senator HANSEN. Thank you very much.

(The material submitted by Senator Cooper is in the appendix.)

Senator MOSS. Senator STEVENS, do you have any questions?

Senator STEVENS. No. Our colleague has demonstrated once again why he has been such a leader in this area. I could make a political speech for you now, Tom, but I don't think I will.

Senator MOSS. Thank you very much, Senator Cooper.

We will now hear from the Honorable Howard Baker, Senator from Tennessee.

We are pleased to have you, Senator Baker.

STATEMENT OF HON. HOWARD H. BAKER, JR., A U.S. SENATOR FROM THE STATE OF TENNESSEE

Senator BAKER. Thank you, Mr. Chairman, members of the committee.

I appreciate this opportunity to address this subcommittee on the urgent problem of strip mine reclamation. I am convinced that Federal involvement in this area is imperative, if we are to turn around the forces of environmental and economic devastation resulting from present strip mining practices. Certainly this subcommittee will play a key role in the development of any Federal program.

In Tennessee and throughout Appalachia the impact of surface mining has been particularly devastating. The economic situation in the mountains of eastern Tennessee and Kentucky, West Virginia, and Pennsylvania has for generations been one of poverty. There

has been little industrial growth and the removal and exploitation of the natural resource of the region has left few benefits to the people. The area has been referred to as America's colony, and I must admit when I view the wholesale destruction of the scenic mountains by strip mining for coal, I cannot find hyperbole in the statement.

It was once said that the coal of Appalachia would bring it wealth in time. But, gentlemen, it has not; it has rather brought the destruction of the region's last major resources.

In his testimony before this subcommittee a few weeks ago, Chairman Russell Train of the Council on Environmental Quality pointed out that strip mining activities across the United States are claiming 750 acres per day. I am told, Mr. Chairman, that is surface mining of all types, not just for coal. That would mean that approximately 200,000 acres of land in the United States have been turned in the search for minerals since January 1, 1971.

In the whole of 1970, a year which was marked also by an emphasis on surface mining, the National Coal Association reported a total of 58,000 acres officially approved as reclaimed lands. The disparity of these statistics points out the rate at which areas of stripping activity are building up an enormous environmental debt.

What is even more disconcerting is that the Department of Interior reported an estimated backlog of 2,041,000 acres of "unreclaimed strip—and surface—mined lands" in 1965.

But statistics are not fully revealing and certainly not in comparison to the stark evidence of destruction apparent on the faces of a whole mountain range blessed with rich coal resources and once blessed with magnificent beauty.

I make these observations not for the purpose of creating an emotional indictment against strip mining or the strip mining industry, but rather to point up the importance and extent of our problem; to identify its causes and to plot a course of action for the future.

And, I believe, Mr. Chairman, there is a future. To begin with, regardless of our mistakes in permitting strip mining, unregulated or only slightly regulated, the fact of the matter is that the power grids of the Nation, especially those of the Southeast, are dependent to a remarkable extent on the production of coal from surface mines and this dependence cannot be withdrawn suddenly without unacceptable economic and social consequences. Fifty percent of our power production across the United States depends upon coal for fuel, and 50 percent of that coal is produced by surface mining.

The present competitive advantage of strip mining of coal results from a variety of factors, including the swiftness with which production can be realized, the relative safety to personnel, and sadly the failure to assess in the cost of production the enormous environmental debt left by unreclaimed operations. What clearly is an advantage in terms of the cost of electricity is an unconscionable burden on the geography and society of an area of our country ill equipped to bear it.

To the extent that strip mined coal can presently be delivered more cheaply and quickly to the power grids than would be the case with strictly regulated surface mining with adequate reclamation, Appalachia and the other regions of coal production are subsidizing the energy requirements of the Nation. In Appalachia this subsidy rep-

resents the loss of possibly the last significant natural resource—the scenic beauty of the region.

So, what do we do: Mr. Chairman, I recommend:

First, we withdraw from the present practices of strip mining as quickly as possible—over the space of a relatively short time—the time it takes to develop other extractive techniques or to bring strip mining and reclamation techniques to a level of sophistication commensurate with the environmental threat.

Second, we eliminate the temptation to permit underregulated strip-ping in States which have every reason to cry out for some economic advantage or by landowners who can find no other productive use for their property.

Third, we pass a Federal statute making uniform the methods for removal of coal by strip mining and eliminating the competitive advantages and disadvantages between one State or the other and require instead the highest reclamation techniques in all the States.

Fourth, we vest regulatory and enforcement functions under such a statute in the Environmental Protection Agency and provide the Agency authority to prohibit stripping in any area where adequate or desirable reclamation is not possible.

I might add, Mr. Chairman, that since this statement was originally written, I have listened very attentively to the suggestions, including Senator Cooper's, that a better approach to the Federal involvement is to pattern a Federal statute after the Air and Water Quality Acts, and to have Federal guidelines, with State implementation, modified to the extent that we require Federal intervention for swiftness and uniformity.

Fifth, we should consider the establishment of a severance tax on all coal and other fuels at the Federal level to insure uniformity and make the proceeds thereof available to the States or locality if they elect so that the benefits of this resource can accrue to the area in which it is located.

In order to deal comprehensively with environmental ramifications of coal production, regulation of deep mines both during and subsequent to extraction will have to be undertaken with equal diligence to that embodied in the aforementioned proposals for strip mine controls. Such a program must treat effectively the problems of acid mine drainage, slate dumping, uncontrolled burning of residues, and subsidence of abandoned mines.

Many of the witnesses in earlier hearings before this committee have cited as a virtue of several bills presently pending that they embody a comprehensive treatment of all phases of mining. While I feel that certainly all mining practices, as they hold the potential for environmental damage, must be controlled, I feel that the situation with strip mining is an emergency and in 2 years will be a complete disaster.

If we do not act with speed in the area of coal strip mining, in a short period of time, Mr. Chairman, it will be too late. We cannot afford the luxury of a comprehensive approach at this time. We must target the immediate effort to the problem of coal surface mining if we are to benefit those areas where such operations are removing the face of the landscape at an almost unbelievable rate.

I want this country to have the full utilization and the full blessings of its resources and its initiative, fully powered by the greatest econ-

omy and the largest energy system in the world; but without the requirement that a poor and delicate area of the country subsidize the future with the destruction of its last natural resource.

I want to see coal play its rightfully dominant role in the energy requirements of this Nation in the future, ranking as it does as our greatest fuel resource; but I want to see it done in an evenhanded way, without the destruction of the hillsides, the valleys, the streams and rivers, wildlife, or the families and the communities who suffer from the ravages of uncontrolled mining.

I have previously stated a number of times that I intend to introduce in the Congress a bill to regulate strip mining, to provide for a Federal program administered by EPA, and other purposes. I have not yet introduced that bill, and I would like to take this opportunity this morning to say that I am anxious to find common ground among those of us who feel that there must be immediate and positive control of surface mining and reclamation.

It may be that a combination of Federal and State programs is best, or that Federal guidelines, locally administered, will best serve the purpose; legislation patterned after the air and water pollution control programs calling for criteria and implementing standards by the several States may be adaptable to these requirements, and for my part, I am not only willing, but indeed anxious, to explore these alternative possibilities and try to produce a synthesis of ideas supporting strong, effective Federal legislation.

It is my view that these elements are essential:

One, that there be a strong statement of national purpose by the Federal Congress;

Two, that there be an immediate moratorium on new unregulated strip mine activity;

Three, that existing coal strip mine operations come within the scope of new and improved reclamation techniques as soon as reasonably possible;

Four, that reclamation techniques be determined on the basis of the severity of the environmental insult. In this respect, Mr. Chairman, it would be my hope that the operative language of new Federal legislation might require substantial restoration of the original topographical conformance of the land unless a different conformance might seem as desirable or more desirable from an environmental standpoint, viewed both locally and nationally.

But the hallmark of our challenge at the moment is time. I think something must be done immediately.

Senator Moss. Thank you very much, Senator Baker, for your very pointed and urging statement. I think this committee agrees that the need for action is urgent and we must act as soon as reasonably we can.

I like your suggestion that we think along the lines of the statutes which we have already passed for air pollution control and water pollution control. We might even name it Land Pollution Control, perhaps, because that is basically what we are talking about. It is a pollution of the environment so far as the landscape is concerned.

Senator BAKER. I think that is clearly so, and most clearly appropriate.

I would like to take this opportunity in that connection to pay respect to Senator Cooper, who has already touched on this idea, and who has been a principal architect and author of this technique over a span of many years in the air and water pollution legislation which is now the law of the land.

I do think that surface mining is a form of environmental insult or pollution.

Senator Moss. It might tend to focus our attention on it a little bit different if we talked about surface mining, and the pollution or destruction of our landscape.

I appreciate your proposals, and I understand they will follow along with what Senator Cooper was testifying to earlier. You think the urgency is such that we ought to have Federal action right away, and then put into effect, if possible, the dual control of the State doing the actual administering?

Senator BAKER. I do; I think we need immediate action, and the only way to do that, I think, is by direct Federal intervention.

Senator Moss. Thank you very much.

Senator Hansen?

Senator HANSEN. Let me compliment you for your usual persuasive candor, Senator Baker, and to assure you insofar as I know people throughout this country generally agree with the overall long range view that you take as to the seriousness of this problem.

We happen to think we are doing a better job in Wyoming than has been done in some States. I am not familiar with all parts of Appalachia, but I am certain that for a number of reasons, which include the great differences in rainfall in the arid West as contrasted with the Eastern parts of the country, some of the activities that are of extreme concern to you, are not as extreme effects in some parts of the West.

It is my understanding that one of the biggest users of the strip-mined coal has been the TVA, is that correct?

Senator BAKER. That is correct. TVA, I believe, uses the vast majority of the coal mined in the south Kentucky and east Tennessee areas.

Senator HANSEN. I know, and it is generally agreed that the abundance of electrical energy has been a real boon to that entire region. Is that a fair statement?

Senator BAKER. Yes, but I think you have to make a distinction between the abundance and cost.

One of the considerations to be most fairly faced in this examination is that surface mining unreclaimed or only slightly reclaimed, in effect, amounts to the accumulation of an environmental subsidy in the favor of the power users to the extent that strip mining coal in Tennessee, Kentucky, and West Virginia, may be \$2 cheaper than the deep-mind coal. The land, if it is not reclaimed, is paying that power bill.

We have been exporting power to the northeast for instance, in times of brownouts and shortage, and we are happy for that. That is not justification for requiring a poor delicate area of the United States to pick up the tab to the extent of a couple of dollars a ton in favor of the people who use the electricity.

I used to be called a hillbilly, but it is only slightly facetious to say

there are going to be no hills left—mountain ranges are almost disappearing. They have crowns on the top and a big mud slide down the side.

If some element of energetic concern—if some emotionalism creeps into my statement, you will have to excuse it.

Senator HANSEN. I think it is fair to say that in the history of the United States, until recent years in many, many cases, we have been concerned in the marketplace in doing only one thing, and that was to produce as abundantly and as cheaply as possible. We gave little attention to what we might be doing to the environment around us. As a consequence, part of the cost of cleaning up the environment and restoring the landscape has been borne by those areas which did produce the natural resources.

My next question is: Do you have any idea how much it might cost in terms of increases in power costs delivered at the retail level to do the kind of job you think should be done?

Senator BAKER. No. I have seen a number of figures ranging anywhere from an average increase of 10 cents a month for an average customer for electricity, and in some cases more and some cases less than that. The most direct way to do it would be to compute the average B.t.u. cost to a power system of the coal, and to convert that to reclamation cost. I am sure that the Bureau of Mines, or the Federal Power Commission, or the TVA could do that.

It is my hope in respect to that that either in this legislation or voluntarily on its own initiative the Federal Government will undertake some demonstration projects soon to try to establish techniques for satisfactory reclamation.

I talked to one fellow who said we can do absolutely perfect reclamation for 50 cents a ton; another fellow said we can't touch it for \$3 a ton. I do know we can't go on subsidizing coal production at whatever rate.

I hope one of the things the subcommittee might consider would be authorizing legislation for funds to provide very, very prompt demonstration projects to ascertain these costs.

Senator HANSEN. I welcome this opportunity to have you explore with me some of the ramifications which these proposed steps will have on the price of delivered energy, because I think that is a very important part of the story.

I have attended, as I am sure we all have, these environmental conferences, and I salute these citizens and their enthusiasm for trying to improve the environment. Very often their approach has been that all that needs to be done is pass tough laws to shut down industry and stop operations, and that this action is going to solve the problem.

I believe the first conference on the environment which I attended in Casper, Wyo., a few years ago was what is needed for public awareness that it is going to cost a lot of dough.

We are not addressing ourselves to the coal miners in Appalachia exclusively. We are talking to people in Chicago, New York City or wherever they may be—because all of us are going to have to pay the costs, and it is a very high cost. When any of these power companies talk about raising rates, I don't hear many people saying raise

them more and clean up the environment. What I hear generally, don't raise these rates, they are too high already.

Senator BAKER. People are going to have to realize that environmental clean-up costs money. Whether it is private or public money is immaterial. It costs money. Even so, I fully agree with you, Senator Hansen, and I fully agree with you that the country is only now coming to terms with this situation—even so, I cannot square the idea that one of the poorest regions of the country would be called upon to subsidize the power rates of the Nation.

Senator HANSEN. I don't argue with you at all. I agree with you. I think we have a real job to do in seeing that the FPC and all of the regulatory agencies understand it is going to cost a lot of money. I hope we can alert the people of this country to understand that when the bill is finally paid, it is coming out of their pocket, out of your pocket and my pocket, and nobody else's. That is how it should be.

I subscribe completely to that determination. Nobody else is going to pay the bill. We are going to pay the bill ourselves. We who use electricity, all 207 million of us.

Thank you.

Senator STEVENS. Do you believe that EPA can continue to get these additional assignments, the water pollution, air pollution, ocean pollution—it seems to a great extent that it will be before the decade is over, the whole focal point of government, if we continue to say let EPA do it. Are we so distrustful of the Department of Interior, for instance, that they cannot set guidelines? Are we saying we can't trust them?

Senator BAKER. I don't think we are. I think that the history of the development of NEPA and EPA was one to reorganize the administrative handling of environmental programs. You are right, EPA is growing like topsy, the environment encompasses almost everything. EPA was lucky to have a very good first director, Mr. Ruckelshaus, and we are going to have to start farming it out to Interior, Bureau of Mines, the States or somewhere else. This is one reason I agree with Senator Cooper's idea of getting the States into it. But you are right, the environment encompasses almost everything. It reminds me of a general practitioner I know, a specialist asked him what his specialty was; He said, "Dermatology; I specialize in the skin and its contents."

Senator STEVENS. My State has a little old pipeline we have been trying to build for 3 years. The cost has gone from \$900 million to \$2 billion. We are dealing with the same technology, the same people. All we have to do is convince the rest of the country we are not going to do to our country what has been done to your country.

If it takes that long to get started, it is really—as I understand it, you want regulations and not prohibitions, but you are suggesting turning over the control of strip mining to the very people who would, in fact, prohibit its development.

Senator BAKER. I realize, I think, in answer to that, of course there are abuses of discretion in any consideration. I am not charging EPA with abuse of discretion. It seems to me in the final analysis, surface mining is an environmental problem. More than anything else it is an environmental problem, and if it is an environmental problem, I would

rather see the tested format of the Federal criteria and local implementation plans supervised by EPA employed than any other administrative set-up I can think of.

Senator STEVENS. What is there in the world that man does that is not an environmental problem?

Senator BAKER. I don't know, but I don't want him doing it without careful regard for the ecology in my part of the country.

Senator STEVENS. I know, but I think we should stick with the expertise of the State line agencies that we know and impress on them our environmental concerns, and still have the people who are experts in the individuals tell us what can be done within the guidelines to be set.

Senator BAKER. I think, in effect, we have two semiseparate considerations in surface mining; one, the mining aspect which the Bureau of Mines would take and develop and promote; and the other would be the environmental aspect, which EPA would regulate.

Senator STEVENS Thank you.

Senator Moss. Senator Fannin?

Senator FANNIN. Thank you, Mr. Chairman.

I feel not only that the Federal guidelines would be a more acceptable plan, but perhaps the least costly plan. I am very much concerned with EPA, some of the work they have been doing. I realize it is extremely valuable. At the same time we can't lose sight, with the tremendous thought involved, perhaps where the benefits do not justify that cost. I think we must have a balance.

I am vitally concerned over, as you know, trying to compete with the other countries of the world. We are not in a position to do so if we do not have low-cost power.

At the same time, I feel we can have this balance, if we can have a good environment and low-cost power. We are very dependent upon our coal reserves, because of the depletion of our natural gas and other petroleum products. I know in the West now we are becoming more and more dependent. I know you have been very active as far as nuclear power is concerned.

In the Tennessee area, do you think nuclear power will become a factor?

Senator BAKER. I think it will gradually. I don't think we can depend on it to pick up the slack, so to speak, created by growth and expansion. I think we have to find a way to produce this coal for the foreseeable future. We can't produce it by environmental debt accumulating.

Senator FANNIN. I have witnessed some of the results that have happened to the areas you are speaking about, and I am concerned. I don't want that to happen to my State. I will pay tribute to the Department of Interior when this is all completed in 30 years. The land there will be in much better condition than when it started. In fact, as it goes along, they will have a productivity they do not have now. They will have facilities that are not available now.

So, as an overall plan they will try to reclaim the land and have it back to its original state as far as possible.

Senator BAKER. I think your area is more fortunate than the Appalachian area. You can essentially restore and possibly improve much of the land that you are going to surface mine.

What I am saying is, I want the same thing in the mountains. We are going to essentially restore or substantially improve that area, and that may mean some parts of Appalachia cannot be stripped, because they are too steep.

Senator Bentsen, of Texas has been usually efficient in the field of cost ratio, but in that respect, I think we have to bear in mind that you can have a cost-benefit ratio, and it is a desirable thing to say strip coal, but you don't dare have a cost-benefit ratio when you are talking about a hazardous substance or poisonous material.

What I am saying is that strip mining in its present and unregulated form is such an undertaking that we can't yet apply the cost-benefit ratio. We have to bring it into decent standards of reclamation.

Senator FANNIN. I understand that we do have projects now that will bring forth the realization it can be done, and be done in an economic fashion. When we talk about what we are going to do in the future, when less than 1 percent of our power is produced by nuclear energy, and we have no suggestion that it is going to be produced any other way but by coal, I think we must work within that possibility.

I appreciate your thoughts that the only area in which we may disagree is to the EPA, or what agency—I have great faith in what the Department of Interior is doing now. I feel if we can stick by them we will benefit much more than by any other agency.

Thank you.

Senator Moss. Senator Allott, do you have any questions?

Senator ALLOTT. Only one, Mr. Chairman.

I would like to say this: Trying to pick up in a few minutes the trend of the discussion, I must again express my concern of trying to establish regulations on a national basis. I don't know your statement very well. I know it well enough to know the general nature of it, and the things which regulations and guidelines that might be set down for your State might not, for example, be entirely applicable at all to the Four Corners area.

We have in Colorado, as you know, vast quantities of oil shale, as are contained also in the same formation in Utah and Wyoming. It constitutes by far the largest source of energy, unused energy, in the country at the present time. If you take the three States together.

Involved in this are going to be all sorts of techniques of mining. There is a big change that has come with respect to mining in this country. I have attended the oil shale symposium conducted in Denver by the Colorado School of Mines for the last 6 or 7 years. At the time those symposiums first began, there was little thought given. Maybe they are older than 7 years, but there was little thought given to the reclamation or rehabilitation of land.

But in attending those, in similar institutes, I find there is no major producing company today who isn't thinking in terms of putting the cost of reclamation or rehabilitation, land rehabilitation in as a prime factor in the cost of production of the raw material, whether it be coal or oil shale or something else.

I don't know whether you have had a chance to see, and I will be happy to show you personally, an investigation I made privately on my own this spring with respect to the work that has been done by the Brown Coal Co., southeast of Callon in Germany, by strip mining seams of lignite 900 feet below the surface, and they are about to open

up what appears to be one of the largest open pit mines in the world, in which they will mine lignite 1,200 feet below the surface by strip mining.

They have through the application of man's imagination and his ability not only replaced the land they have stripped there, they have established whole new villages; they have restored farmland to above its previous productivity level; in fact, they don't put it back in until it is 110 percent of the previous level. They have established farms and lakes and new forests so that the land can truthfully be said to be a more desirable area, recreationwise, visually and every other way than it was before.

I have this feeling that those of us who are genuinely interested in this do not lose sight of the goal, it is not our intention to extract minerals and then leave it, but we shall accompany that as an essential part of it with land rehabilitation. What man's technology can do to extract the minerals, can always do to—in your last paragraph you refer to the original topographical form. They have not always done that in every instance, but they certainly have not deteriorated the topographical conformity with the surrounding area.

I have nothing against NEPA at all, but I must say I think in the Interior Department we also have some very, very fine people capable of dealing with this, and would be concerned somewhat to lock my portion into a complete set of regulations that will be applicable to West Virginia, Tennessee, and Kentucky, and what others may be involved here, which may have little applicability to the West and the different kinds of topography we have.

These are the only thoughts I wanted to say here, because too many times we in the West find that laws are enacted upon the theory that the entire country has the same problems and in the same situation as the eastern tier of States or first two eastern tiers of States, which isn't true.

The goals we want at the end, whether it be coal mining or oil shale, are not different than the goal you want, but I don't want to be rushed into a set of regulations which we have to conform to and which we are essentially treading water just to obtain a bureaucracy.

Senator BAKER. I think, Senator, it is clear you have to have different techniques in different parts of the country to account for the variations of the problem. The underlying concern to me is that there is no requirement now on the Federal level, and my experience has been that I have never seen, though I have made an active effort to find, a strip mine operation that was reclaimed as I thought it should be, except in flat land or semiflat land. Whether the Bureau of Mines or EPA or somebody else finally has charge of seeing that what is done is what must be done is really secondary.

I prefer EPA because I think it is an environmental problem, and it is one of the flexibilities I spoke of. However you do it, the crucial feature is that we mandate clearly to restore the land from which the mineral is removed.

Senator ALLOTT. What do you mean by restore?

Senator BAKER. The language I used was to require substantial restoration of the original topographical conformance of the land, unless a different conformance might seem as desirable or more desirable from environmental standpoints.

Senator ALLOTT. I think I could accept that very well. It can be done, and I have seen it done. I have seen forests where forests didn't exist. I have seen new, modern villages constructed which was stripped originally by strip mines. I have seen hunting areas, recreation areas established. I have seen this done.

In this area we are all alike. We want to see that. I can accept that term of restoration.

The thing I am concerned with is trying to have the Western States conform to a set of national regulations which may have no applicability to the West, to achieve the same end results you want to create.

Senator BAKER. I agree. Regulations cannot be the same for Colorado, Wyoming, and others as they are for Kentucky, or West Virginia.

Senator ALLOTT. Thank you. That is all I have.

Senator MOSS. Senator Jordan?

Senator JORDAN. Senator, you have made a fine statement. I think we are generally in agreement as to the need for reclamation restoration. You do inject a new thought into this, and I refer to your point five under what should we do.

Assuming now we are restoring and restoring this strip-mined land to nearly as good as it was in its original state, you go on to say:

We should consider the establishment of a severance tax on all coal and on other fuels at the Federal level to insure uniformity and make the proceeds thereof available to the States or locality if they elect so that the benefits of this resource can accrue to the area in which it is located.

Would you develop that a little for us?

Senator BAKER. Yes, sir. Let me go back to the genesis of the idea, Senator.

In virtually every area of the country, the ad valorem property taxes are the principal tax base for the local government. In virtually every mineral area, the ad valorem tax base is not realistic. I toyed with the idea of trying to find some way to see that the mineral being extracted from a given county or area paid its fair share of the tax-load for that area, and I ran into a problem.

Coal underlies all of the Southeast United States. The question is, Is it minable or is it not?

Senator JORDAN. What is the practice in coal areas of taxing undeveloped coal lands? Is it taxed at a higher rate of mined land or not?

Senator BAKER. There is not any clear-cut policy. The most general one in Tennessee, and I imagine it varies from Kentucky and West Virginia—in Tennessee, there is no act to tax coal mines per se. If there is an area of 5,000 acres being mined, there is an assessment increase. In other cases, you will have a separation of ownership of mineral and surface interests; and in those cases, there is a separate tax.

In 90 percent of the cases, there is no adequate assessment of the value of minerals in the ad valorem taxes. The mineral interest may or may not be valuable, when the minerals are undeveloped.

In lieu of an effort to find an ad valorem tax for undeveloped minerals, I came to think the best way would be to have a severance tax at the moment of extraction of the mineral. What I was thinking about was a Federal tax on minerals—particularly on coal—that a State, if it chose, or a city or county, could reclaim from the Federal Treasury.

A severance tax, I am convinced, is a far more equitable way to reach mineral values than an adjustment of property ad valorem taxes.

Senator JORDAN. Thank you very much.

Senator MOSS. Would you extend this tax to other minerals besides coal if they were surface mined?

Senator BAKER. Yes; I think this approach could be equally applicable to other minerals.

Senator MOSS. Thank you very much. We do appreciate your testimony and for this colloquy we have all been able to conduct with you, and it has helped us a great deal to be able to talk it through.

Senator BAKER. Thank you, Mr. Chairman.

Senator MOSS. Senator Hansen has a statement that he put off to this point, and I ask him if he would like to make that statement now and call our next witness.

STATEMENT OF HON. CLIFFORD P. HANSEN, A U.S. SENATOR FROM THE STATE OF WYOMING

Senator HANSEN. Thank you very much, Mr. Chairman.

I am delighted, as most all of us are, that Senators Cooper and Baker could be here, and I think their statements and responses to questions have been very helpful in trying to help us understand more clearly the problem that exists in the important region known as Appalachia.

Mr. Chairman, I am very grateful to you, the members of the subcommittee, and the staff for scheduling these hearings today on S. 1160, legislation which I have introduced to permit the Secretary of the Interior to make grants to the States to seal and fill voids in abandoned coal mines and abandoned oil and gas wells.

The subcommittee has devoted much time and effort to several bills pending in the Congress concerning strip mining and underground mining, and the restoration and reclamation of mined lands. I am deeply concerned, however, that these bills do not provide for restoration and rehabilitation of areas which have been mined in the past and have been long since abandoned.

The Federal Government presently offers assistance to the Appalachian region of the Nation for the purpose of sealing and filling abandoned mines. The conscience of the Nation was awakened as cities such as Scranton, Pa., struggled to save buildings and homes which were breaking apart as the ground subsided beneath them. The Nation came to the aid of these people.

While the problem is most obvious in the more heavily populated and mined Appalachian area, the problem is widespread, involving 30 or more States. A family in another part of the Nation who loses their home to subsidence, suffers as greatly as their Appalachian brothers. Their situation is a little more isolated, but in both cases the family is left without a home which in many cases represents their life's savings and work.

Thirty of the 46 States where abandoned mines are known to exist have reported subsidence occurrences. While subsidence does not always occur in populated areas, I would like to submit for the record an incomplete list of the urban areas where mining has occurred and where it may be necessary to make specific studies to determine subsidence potential. This list will help illustrate the extent of the prob-

lem. Whenever subsidence occurs in the populated area, the damage is just as real to the individuals involved and the hardship is just as great whether they are in Appalachia or Wyoming, or another part of the country.

Mr. Chairman, I would like to submit for the record a copy of an article which appeared in the Denver Post last Sunday, November 28, entitled "Wyoming's Sinking City." I regret that the author did not report on the hard work and progress which has been taking place to alleviate the subsidence problem in Rock Springs, Wyo., and to provide a permanent solution to the problem. This effort includes the legislation which this subcommittee is considering today. But the article does give the reader some idea of the despair and hopelessness felt by those who are touched by the disaster of mine subsidence.

I also ask that a letter from the Urban Renewal Board of Rock Springs expressing a need for this legislation be included in the hearing record.

I support the efforts of those who desire to insure that future mining operations do not lead to the loss of men's homes. But at the same time I do not think we can turn our backs on those who are losing their homes today as a result of the subsidence of abandoned mines from the past. It is appropriate for the Federal Government to lend a helping hand to all its citizens.

Today, the subcommittee will see a working model of a new technique which has been developed for backfilling abandoned mines. This technique has been tested once in Rock Springs, Wyo., and a new test is underway. To my knowledge, every indication is that the technique will be highly successful, more efficient, and less costly than the old techniques, and will not require the disruption of the community to the extent necessary using the old techniques.

With this new development and the need of those outside of Appalachia for assistance, it is my hope that the Congress will enact S. 1160.

Senator Moss. Thank you very much, Senator.

I know now what that model was about. I was looking at it and wondering how it worked. I am sure we will be enlightened on it.

Your problem, of course, with backfilling and underground mines is of equal urgency with the problem of strip mining and surface mining. Very glad to have your statement.

Senator Moss. We will now hear Assistant Secretary Hollis M. Dole and Dr. Elbert F. Osborn, Director of the Bureau of Mines.

STATEMENT OF HOLLIS M. DOLE, ASSISTANT SECRETARY, MINERAL RESOURCES, DEPARTMENT OF THE INTERIOR

Mr. DOLE. Mr. Chairman, it is always a pleasure to be before your committee, and I do want you to know how sincerely I appreciate the interest that you and the other members of your committee, Senators Jordan, Hansen, Stevens, Fannin, and Allott, have given to this mine-land reclamation.

I have a statement here that I have submitted which I would like to have put in in its entirety in the record.

Senator Moss. That will be included in its entirety.

Mr. DOLE. And I have a short statement which I would like to present orally.

Mr. Chairman and members of the committee, I am glad to have this opportunity to come before you to explain the Department of the Interior's position on S. 1160, a bill which has the commendable objective of rehabilitating mined areas which have been damaged by past deleterious mining practices.

I have a statement which, with your permission, I offer for insertion in the record.

I propose merely to comment on the highlights of that statement at this time.

I wish to say at the outset that we in Interior are appreciative of the mounting public concern over the abuse and spoilation that have already occurred to millions of acres of our countryside as the result of mining operations conducted in past years.

We understand this concern, and we are grateful for the presence of perceptive leaders in the Congress like Senator Hansen, who recognize the scope of past destruction and its implications for the future.

I congratulate Senator Hansen for calling attention to a problem of nationwide dimensions, and for his earnest desire to provide a solution.

The old saying "The Past is Prologue" sums up one of the two chief features of our position toward S. 1160.

We know that more than 7 million acres of land have been undermined; that more than two and a quarter million acres have been left unrestored from surface mining; and that some two million acres more are buried under mine-related solid wastes.

But even more important, we know that this huge backlog of despoilment will go right on increasing year by year unless we act promptly to stop it.

If we do not, then there is every prospect that by the year 2000 the acreage of undermined land will have increased by half; that ruined by surface mining will have doubled; and the surface area occupied by mineral wastes will have increased almost two and a half times.

In our view, our first obligation is to the future, and toward what we can do to prevent the degradation of land by future mining operations.

It is infinitely cheaper and easier to attend to site restoration while the operator is still on location than it is to rehabilitate acreage long since abandoned.

Our estimates of the cost of backfilling abandoned mine workings range between \$10,000 and \$15,000 per acre; for reclaiming surface mined areas the cost might range from \$500 to \$1,100 per acre, with certain lands requiring much more expensive work.

When these costs are applied to the vast backlog of acreage in need of remedial work, the total costs mount rapidly into billions of dollars.

Now, no one pretends that restoring past damage is going to be either cheap or easy, and we should not defer work that is essential merely on the basis of cost alone.

But we have a duty to see that funds for this purpose are effectively utilized, and here we are handicapped by the lack of some essential information.

We do not have the precise knowledge we need as to the exact location, or indeed in some cases the overall extent, of past mining damages.

Neither have we developed as efficient techniques of repairing these damages as we would like.

Both kinds of information are needed to assure that we are spending the taxpayer's dollar as effectively as possible.

We believe that much of this needed knowledge and technology will be gained under the programs established by S. 993, and can then be brought to bear upon the rehabilitation of past-mined areas.

The requirements of S. 993 for regular monitoring of mined areas, and the assistance offered for the inventorying of mined areas affected by present and future mining operations will result also, we think, in the compiling of a significantly more accurate catalog of past mining damages.

We also anticipate that the research program envisioned in S. 993 will greatly expand the variety and effectiveness of reclamation techniques.

For these reasons we urge that the committee give its first consideration to the administration's proposed S. 993 as the most practical approach at this time to the problem of reclaiming and processing of any mineral, including lands affected by waste piles. However, there are basically two reasons why we cannot support its enactment.

First, S. 1160 is directed solely to correcting the mistakes of the past. None would deny that the cumulative damages resulting from the unregulated mining practices of the past are considerable. The estimated 6.7 million acres of land undermined by the removal of coal and other minerals through 1965, of which about 600,000 acres have been left susceptible to subsidence, the 2 million acres of un-restored surface-mined land estimated in 1965 to be in need of some sort of remedial treatment, and the estimated 1.8 million acres occupied in 1965 by accumulated mine related solid wastes, come first to mind.

These problems are indeed extensive, and in many cases, longstanding, representing the accumulated effects of over a century of mining. It should be recognized, however, that the largest proportion of the acreage affected has been disturbed in more recent decades. This is the result of the great expansion in mining to meet our society's accelerating mineral demands. Since 1965 another 400,000 acres is estimated to have been left unreclaimed by surface mining, and many more thousands of acres occupied by additional mine wastes.

Furthermore, we estimate that unless corrective measures are taken, by the year 2000 the total acreage for undermined land now believed to be about 7.1 million acres will have increased by one-half; the 2.3 million acres of land left un-restored by surface mining will have doubled; and the surface area occupied by mineral wastes increased almost two and one-half times.

The meaning of these data is clear: preventing the annual additions of new problems is relatively more important than initiating broad new programs to ameliorate the affected lands of the past. We must bring under control today's and tomorrow's potential damages to the environment before we can make reasonable headway against those of yesterday. The administration's proposed Mined Area Protection Act of 1971, presently before the Congress as S. 993, embodies this approach, and deserves your most immediate consideration.

Our second reservation concerning S. 1160 is centered quite simply on the basis of cost. It is truly a very substantial expense which will be involved in repairing past mining damages. It is not one that can be imposed readily on its perpetrators, as too many of the former mine operators and landowners no longer control or own the mined property. And because our knowledge of what really needs to be done is incomplete, the potential for costly mistakes is large.

Based on cost figures experienced in recent years by the Bureau of Mines in subsidence control projects conducted under the Appalachian Regional Development Act of 1965 in the anthracite coal mining region of Pennsylvania, even a limited, selective program of subsidence protection, aimed only at backfilling abandoned mine workings under an estimated 150,000 acres of land believed to be most in need of support in the United States, could cost \$1.5 billion or \$10,000 per acre. Obviously, many times this amount could be spent in backfilling undermined lands throughout this country, depending on how much of the 7-million-acre total we decided to support.

We should note in this connection that presently available methods for predicting where subsidence will occur are far from adequate. We must rely mainly upon observations after the fact for our conclusion that approximately one-third of all undermined lands will eventually subside—and two-thirds will not. Research is presently being conducted to develop better techniques of anticipating subsidence and of more effective methods of coping with it. At Rock Springs, Wyo., we have just completed an experiment which shows that relatively large amounts of sand could be injected through a single borehole to fill extensive voids in abandoned mine workings which have become flooded. This was a small-scale demonstration project in which some 20,000 cubic yards of sand was placed under a single 2.7-acre site in the city. To completely backfill the entire area of the city susceptible to subsidence—200 acres in 14 scattered locations or about 17 percent of the total built-up area—would necessitate the injection of somewhat over a million cubic yards of sand through a series of boreholes at a cost of almost \$3.1 million or \$15,500 per acre. Another demonstration project is now underway at Scranton, Pa. to determine if crushed coal refuse can be used in somewhat the same manner to provide surface support, but in an even wider range of underground conditions.

The reclamation and rehabilitation of surface-mined acres would entail a financial effort approaching that of subsidence prevention. As I have noted earlier in my statement, there was estimated to be in 1965 an accumulation of 2 million acres of disturbed surface-mined land in need of basic reclamation. Remedial treatment of that land, primarily to minimize water pollution—largely by grading, revegetation, and drainage control—would cost, it was then estimated, \$660 million. That represents an average reclamation cost of \$330 per acre. We estimate that rising construction industry costs over recent years have increased that per acre cost to at least \$500. Applying that average cost to the estimated 2.3 million acres of unrestored surface-mined land existing in 1970 would result in a basic reclamation bill of \$1.2 billion. Recent Bureau of Mines data on surface reclamation work in the Appalachian States under the Appalachian Act indicates a per acre cost of \$1,100 to return surface-mined land to productive

use. Some special projects have involved costs as high as \$15,000 per acre. Reclamation accomplished as part of the mining cycle is significantly cheaper.

These calculations of surface-mined-land reclamation do not take into consideration the complex, vexing and unresolved legal issues centered on the ownership rights of unreclaimed lands. Over 90 percent of these lands are in private hands. In some cases, owners do not wish to have their lands reclaimed, especially if rehabilitation would make remaining mineral reserves less accessible. In other instances, the expenditure of large sums of taxpayer's dollars for reclamation might result in excessive profits for the owners in terms of enhanced land values. Needless to say, public acquisition of these lands either through negotiated purchase or condemnation, would also add substantially to total reclamation costs.

Stabilization is the principal means we have today of coping with accumulated mine wastes. The Bureau of Mines has had success recently in the development of new and more economic means of stabilizing wastes deposited on level ground, but the technology for stabilizing wastes placed on precipitous slopes is still lacking. Although costly stabilization can ameliorate the harmful off site effects of some banks, the banks themselves will remain, often preventing the return of the land occupied to more productive use. Even if more advantageous sites could be found, the cost of moving the waste to them would be, with our current methods of materials handling and movement, prohibitively expensive. Additionally, ownership problems associated with waste banks tend to be even more complex and troublesome than those connected with unreclaimed surface-mined lands. This is largely because so many waste banks still retain sufficient mineral values to make them a worthwhile long term holding.

Burning waste banks present special problems and require much more costly solutions. Based on costs experienced by the Bureau of Mines in recent demonstration projects for extinguishing anthracite refuse bank fires, suppression of the 292 known burning coal refuse banks throughout the United States could cost as much as \$250 million.

Placing a price tag on the sealing of abandoned oil and gas wells is also a rather difficult task, particularly as their number and exact locations are in large part unknown. We do know, of course, that they number in the tens of thousands, and can be found in almost every State. Experience of the Bureau of Mines in Appalachia has yielded data indicating an average sealing cost of \$2,500 per well there.

We have been discussing costs of considerable magnitude, on an absolute and isolated basis. Correcting damage caused by past mining activity is just one of a number of environmental problems the solution to which requires Federal funds. Before we can justify a massive Federal program to rectify past mining damages, a detailed cost-benefit analysis must assure that this undertaking can be justified when compared with other environmental programs to cope with similarly pressing problems such as water and air pollution. Nor can we, acting principally with a legitimate concern for the best management and conservation of our natural resources, neglect to determine how this rehabilitation program, or series of other envi-

ronmental programs, ranks in importance with programs dedicated to the development of our national human resources.

From much of the material which has been mentioned today, it should be apparent that we are currently handicapped in reclamation attempts by a lack of more precise knowledge concerning the exact location—and indeed in some cases of the overall extent—of past mining damages. Neither have we developed as efficient techniques of repairing these damages as we would like.

We believe that much of this needed knowledge and technology will be gained under the programs established by S. 993 and may then be brought to bear on the rehabilitation of past-mined areas. The requirements of S. 993 for regular monitoring of mined areas, and the assistance offered for the inventorying of mine areas affected by present and future mining operations, will result also, we think, in the compiling of a significantly more accurate catalog of past mining damages. We also anticipate that the research program envisioned in S. 993 will greatly expand the variety and effectiveness of reclamation techniques.

For these reasons we again urge that you give your first consideration to the Administration's proposed S. 993 as the most practical approach at this time to the problem of reclaiming areas disturbed by mining operations.

Senator Moss. Thank you, Mr. Secretary. Does S. 993 authorize the expenditure of funds to refill these old mine shafts?

Mr. DOLE. No, sir; it does not. It does authorize research funds to address the problem of these mines.

Senator Moss. Is the position of the Department that the research has not been completed yet, but that you wish to be allowed to do it, is that right?

Mr. DOLE. Senator Moss, the position of the Department is that although we have done research on this in the past and over a good many years, we still think, due to the variety of mining lands, mines, mining operations and differences in terrain, that we do not have as complete a handle on it as we would like.

Senator Moss. Is there an urgency problem though, such as in Rock Springs, that ought to be dealt with more rapidly?

Mr. DOLE. I would agree with that, yes.

Senator Moss. I note that the Department in S. 2727 has one set of regulations governing environmental aspects of mining on Federal land, whereas S. 993 establishes standards for environmental regulations by States?

Mr. DOLE. Yes.

Senator Moss. Would these two sets of regulations differ then?

Mr. DOLE. Yes. 993, Mr. Chairman, would establish guidelines by the Federal Government which the State must meet. Then it goes on to say that the Federal lands must be managed with no lesser amount of care than the State lands.

Senator Moss. States though still have 2 years to get their regulations in effect?

Mr. DOLE. Yes.

Senator Moss. And with the Federal lands in the meantime, would they be regulated before the State lands came under regulation?

Mr. DOLE. Those Federal lands that come under lease now have con-

trol by both the Geological Survey and the Bureau of Land Management. Those Federal lands subject to location of minerals will have to wait out that 2 year period for the States to establish their separate guidelines.

Senator Moss. Senator Hansen.

Senator HANSEN. Mr. Chairman, first let me attest to my extreme appreciation, and I am certain I speak for all of the people in Rock Springs, Wyo., in expressing our gratitude to the witness here, to the Department, and to the Bureau of Mines for the help that they gave the city of Rock Springs and the State government in making possible a demonstration of a new technique that I believe will prove very revolutionary.

I might add, parenthetically, that no one contended when this demonstration experiment was set up that it was going to restore anyone's home in Rock Springs. For those of you who are not familiar with the subsidence problem, it is a rather frightening and traumatic experience for people to be awakened in the night with walls cracking, basements falling apart, sides splitting, and plaster falling. There is an ever present worry that maybe a gasline is going to rupture and the house may be blown apart or that water lines may be severed and the house will be flooded. That is the type of experience to which the people of Rock Springs, Wyo., are subjected.

When the Department of Interior and Bureau of Mines went in to contribute some of the first money to put on this demonstration project in Rock Springs, I am sure many people had different ideas about what was going to be accomplished. What was contemplated was to see if this new technique could provide a new means by which man could, through his efforts, undertake an activity that would prevent this settling from occurring, that would prevent subsidence from taking place. I salute each of you for having been most responsive and sensitive to the feeling of people in making possible what was done in Rock Springs, Wyo.

With respect to your testimony, Secretary Dole, let me say you have been generous in your references to me. I would like to ask you, Mr. Secretary, has the Government undertaken remedial efforts in some parts of the United States to obviate the damage that could occur from additional subsidence?

Mr. DOLE. Subsidence from past activity, Senator Hansen, are you referring to?

Mr. HANSEN. Yes.

Mr. DOLE. Yes; we have. We have under the Appalachian Pact addressed ourselves to subsidence in 11 different projects and we have also, under the same bill, addressed ourselves to some surface land reclamation and to some mine facilities. The experiment on the very small portions affected in Rock Springs, Wyo., is the only one outside of the Appalachian area.

Senator HANSEN. Would it be true if Rock Springs was situated in this Appalachian area, that further help could be available from the Federal Government.

Mr. DOLE. If Wyoming was situated in the area encompassed by the Appalachian Act, it would qualify, yes.

Senator HANSEN. In your judgment, is the damage and the traumatic experience that is concomitant with this subsidence, any less real to people in Wyoming than say in Scranton, Pa.?

Mr. DOLE. Only to the extent that the people in Wyoming might be tougher. It would be the same elsewhere, whether it is in Wyoming or Timbuctoo.

Senator HANSEN. It was my intention to broaden the scope of the legislation that was enacted for Appalachia to make this type of Federal help available to people in any part of the United States, wherever a similar problem should occur. Does my bill, 1160, in your judgment, tend to achieve this objective?

Mr. DOLE. As you have described it, S. 1160 would achieve this objective, Senator Hansen.

Senator HANSEN. I have no further questions.

Senator MOSS. Senator Fannin.

Senator FANNIN. Thank you, Mr. Chairman. I was very interested in what you had to say on the planning and programing, Mr. Secretary, to be done under the bill, to recommend—BLM requires now that they have reclamation on land?

Mr. DOLE. Yes, the Bureau of Land Management does, and on the Indian lands this is under the control of the Geological Survey.

Senator FANNIN. Then the contract that was made on the Navajo Reservation, this came under the survey?

Mr. DOLE. Yes.

Senator FANNIN. Are you familiar with that program as to the extent of the reclamation?

Mr. DOLE. No, Senator Fannin, I am not. I know there is a project down there.

Senator FANNIN. I was very impressed in what was delineated to me as to what would be done within the period of time, as this project progressed. I understand, in your new leases, that they are working, and even without the present legislation going through; is that correct?

Mr. DOLE. Yes, on all leasable minerals on Federal lands we have what we consider a good program for mined land reclamation which must be met before the mining starts. As a matter of fact, they must submit a mining plan. We are continually reviewing that program both within the Bureau of Land Management and the Geological Survey in order that the environmental danger will be kept at a minimum.

Senator FANNIN. I understood you to say, Mr. Secretary, that if the State sets a higher standard, or maybe I am not sure that I understand you correctly, that if the State sets a higher standard for the land, other than the Federal land, but the Federal land then will be brought up to the State standards or the requirements will be the same?

Mr. DOLE. Yes. S. 993 says that the reclamation work on Federal land will be no less than that required by State law.

Senator FANNIN. I think that is commendable. It depends on the States involved and this would give some flexibility to it. I think the restrictions that could be placed in some areas, would be compatible with what developments come forward, that could be very undesirable in another area in the country, the flat land and these hills that Senator Baker was talking about.

Mr. DOLE. I think that responds, Senator Fannin, to one of the concerns that Senator Allott expressed, that the Federal guidelines not be so stringent and rigid that they control all 50 States. To give the States that have topographic and geologic differences free play. To let the States establish these standards within the Federal guidelines,

and then have the Federal lands come and meet these minimal standards.

Senator FANNIN. We must do more, but at the same time we have an economic problem to contend with that is very complicated. There are other parts of the world that have low-cost power, and low-cost materials, and consequently they are going forward more rapidly than we are in this field of endeavor. We are only talking about less than 1 percent of our total power by nuclear energy, 1 percent.

Mr. DOLE. Less than 1 percent.

Senator FANNIN. There was a figure given, of 10 percent by 1980.

Mr. DOLE. It is about 15 percent, if I recall.

Senator FANNIN. Will we continue to draw upon coal?

Mr. DOLE. We will continue to draw upon coal. In my opinion it is necessary we continue to draw upon coal, because of the lack of natural gas to meet full demands and the depreciation in our oil producing capability. The net result is that we have to turn to foreign insecure sources for oil and for liquid natural gas. We know we have very large reserves of coal, spread throughout the Nation in very convenient locations, so it properly should fill the energy gap.

Senator FANNIN. I know in the West we seem to be going more in that direction each year, and I can't see any change coming about in the foreseeable future. I know we have environmental problems in that regard and we are working to try to solve them and, certainly the problem is working quite hard and I think the industry is going forward quite rapidly in solving some of these problems. I don't see any other solution than to try to work with the coal reserves we have and do it the best we can.

Mr. DOLE. I think this is right, Senator Fannin. I think it is most evident that we have to add these other two elements to the mining cycle, that is, not only to find it and mine it, but to return the land to other use, and do this in a manner that is safe to workers.

Senator FANNIN. It is commendable that you have given support to this project. In one area of the country there is a great deal being done, and if we have a similar problem in another area of the country, I hope it will be given consideration.

Senator MOSS. Senator Hansen.

Senator HANSEN. I know these gentlemen have seen the severity of subsidence problems. In your considered judgment, and perhaps I might direct this question to Mr. Corgan, do you think there is a good probability, Mr. Corgan, that a technique such as the one we will see demonstrated here this afternoon could result in less overall cost to the Government and to society if it would be implemented, to fill these old mine voids before subsidence occurs? Do you think it would be cheaper to take steps to do that now, rather than to let the subsidence occur, to have to relocate people, to have to go through an urban renewal program or whatever may become necessary in order to alleviate the damage and suffering that otherwise would be visited upon people?

Mr. CORGAN. I think in the long run that it would be considerably less costly in terms of money alone, to say nothing of the problem of relocating people and the suffering of people as such, to have a program that would take care of the backfilling of mines. In the case of Rock Springs, Wyo., there is little doubt in our mind that if

something isn't done in Rock Springs to take care of possibly 200 critical acres, there will be an expansion of the subsidence which the town has been experiencing in a small area to a much larger area.

Senator HANSEN. Just one observation, Mr. Chairman. Senator Baker earlier recommended, and I believe Senator Cooper did also, the turning over of the problem of mine supervision, regulations, and control from the Department of the Interior to the Environmental Protection Agency or to NEPA. I would not feel comfortable leaving the record without saying I believe this would be a very tragic error. I think we would be casting aside all of the knowledge, professionalism, and expertise that we find now reposing within the Department and give these responsibilities to a new agency. The new agency would be a fresh new group of faces, I admit, but beyond that they would be woefully lacking in all of the accumulated understanding and experience we have at the Department of the Interior. I have no doubt that the Department is fully capable. It has demonstrated its conviction and determination to implement whatever laws have been passed by the Congress. I think it is our job as Americans to spell out what kind of program we think best serves all of the people in the long run. I can think of no other people to discharge those duties more fairly and sensibly and more economically than are the persons comprising the personnel in that Department.

Mr. DOLE. Mr. Chairman, let me thank Senator Hansen very much for that statement. I would like to say that we do have a great deal of experience in the Department of Interior in resource management. And we consider the mining and obtaining of resources for the Nation as a primary responsibility. We feel we should do this under the guidelines or, if you wish, under the laws that the EPA sets out. We feel this is a resource management problem rather than an environmental program alone. We can manage the resources with due regard for the environment under the guidelines set up by EPA. We feel this is the way we should progress and we feel this is the way we are moving at the present time.

Senator HANSEN. I remember being in Tulsa, Okla., earlier this year with Secretary Morton, when he keynoted the International Petroleum Exposition. He said the environment is the most important thing in the world until the lights go out. My fear is that we have got to understand, as best we can, the total needs of the people. We all want the kind of environment of which we are so proud in the West. I think we would make a dangerous mistake if we were to think that only the environment is important and fail to take steps that we now should be taking in order to assure continuing presence of adequate amounts of energy. If we do that, then I can see real trouble, complete chaos.

For instance, if you turned out the lights in New York City for about a week, I can't think what else you might have, besides the plague. But people would be dying like fleas there. We can't contemplate such a thing happening. I think we need to take full advantage, Mr. Chairman, of all of the knowledge we have. It seems to me we have a very considerable amount of it at the department.

Senator Moss. Thank you very much.

(Secretary Dole's prepared statement follows:)

STATEMENT OF HON. HOLLIS M. DOLE, ASSISTANT SECRETARY, MINERAL RESOURCES,
DEPARTMENT OF THE INTERIOR

For the last several years, the public has been hearing and reading about or observing, the adverse environmental effects attributed to mining. It is evident that these environmental disturbances are considerable, and can be found throughout our Nation. We now all realize, I believe, that these effects, ranging from the merely unpleasant or unaesthetic to the truly dangerous, must eventually be confronted in their entirety and in some way or other, be overcome. We in the Department of the Interior are particularly convinced of this.

We in Interior are appreciative of the mounting public concern over the abuse and spoliation caused by past mining activities. We understand this concern, and we are grateful for the presence of perceptive leaders in the Congress like Senator Hansen, who recognize the scope of past destruction and its implications for the future. Congratulate Senator Hansen for calling attention to a problem of nationwide dimensions, and for his earnest desire to provide a solution through the bill your committee is now considering.

S. 1160 has for its commendable objective the rehabilitation of mined areas which have been damaged by past deleterious mining practices. More specifically, it would provide a legislative remedy for the sealing and filling of voids in abandoned coal mines and abandoned oil and gas wells, and for the reclamation and rehabilitation of lands affected by the surface mining and processing of any mineral, including lands affected by waste piles. However, there are basically two reasons why we cannot support its enactment.

First S. 1160 is directed solely to correcting the mistakes of the past. None would deny that the cumulative damages resulting from the unregulated mining practices of the past are considerable. The estimated 6.7 million acres of land undermined by the removal of coal and other minerals through 1965, of which about 600,000 acres have been left susceptible to subsidence, the 2 million acres of unrestored surface-mined land estimated in 1965 to be in need of some sort of remedial treatment, and the estimated 1.8 million acres occupied in 1965 by accumulated mine-related solid wastes, come first to mind.

These problems are indeed extensive, and in many cases, longstanding, representing the accumulated effects of over a century of mining. It should be recognized, however, that the largest proportion of the acreage affected has been disturbed in more recent decades. This is the result of the great expansion in mining to meet our society's accelerating mineral demands. Since 1965 another 400,000 acres of land is estimated to have been undermined, another 300,000 acres left unreclaimed by surface mining, and many more thousands of acres occupied by additional mine wastes.

Furthermore, we estimate that unless corrective measures are taken by the year 2000 the total acreage for undermined land now believed to be about 7.1 million acres will have increased by one-half; the 2.3 million acres of land left unrestored by surface mining will have doubled; and the surface area occupied by mineral wastes increased almost two and one-half times.

The meaning of these data is clear: preventing the annual additions of new problems is relatively more important than initiating broad new programs to ameliorate the affected lands of the past. We must bring under control today's and tomorrow's potential damages to the environment before we can make reasonable headway against those of yesterday. The Administration's proposed "Mined Area Protection Act of 1971", presently before the Congress as S. 993, embodies this approach, and deserves your most immediate consideration.

Our second reservation concerning S. 1160 is centered quite simply on the basis of cost. It is truly a very substantial expense which will be involved in repairing past mining damages. It is not one that can be imposed readily on its perpetrators, as to many of the former mine operators and landowners no longer control or own the mined property. And because our knowledge of what really needs to be done is incomplete, the potential for costly mistakes is large.

Based on cost figures experienced in recent years by the Bureau of Mines in subsidence control projects conducted under the Appalachian Regional Development Act of 1965 in the anthracite coal mining region of Pennsylvania, even a limited, selective program of subsidence protection, aimed only at backfilling abandoned mine workings under an estimated 150,000 acres of land believed to be most in need of support in the United States, could cost \$1.5 billion or \$10,000

per acre. Obviously, many times this amount could be spent in backfilling undermined lands throughout this country, depending on how much of the 7-million-acre total we decided to support.

We should note in this connection that presently available methods for predicting where subsidence will occur are far from adequate. We must rely mainly upon observations after the fact for our conclusion that approximately one-third of all undermined lands will eventually subside—and two-thirds will not. Research is presently being conducted to develop better techniques of anticipating subsidence and of more effective methods of coping with it. At Rock Springs, Wyoming, we have just completed an experiment which shows that relatively large amounts of sand could be injected through a single borehole to fill extensive voids in abandoned mine workings which have become flooded. This was a small-scale demonstration project in which some 20,000 cubic yards of sand was placed under a single 2.7-acre site in the city. To completely backfill the entire area of the city susceptible to subsidence—200 acres in 14 scattered locations or about 17 percent of the total built-up area—would necessitate the injection of somewhat over a million cubic yards of sand through a series of boreholes at a cost of almost \$3.1 million or \$15,500 per acre. Another demonstration project is now underway at Scranton, Pennsylvania, to determine if crushed coal refuse can be used in somewhat the same manner to provide surface support, but in an even wider range of underground conditions.

The reclamation and rehabilitation of surface-mined areas would entail a financial effort approaching that of subsidence prevention. As I have noted earlier in my statement, there was estimated to be in 1965 an accumulation of two million acres of disturbed surface-mined land in need of basic reclamation. Remedial treatment of that land, primarily to minimize water pollution—largely by grading, revegetation, and drainage control—would cost, it was then estimated, \$660 million. That represents an average reclamation cost of \$330 per acre. We estimate that rising construction industry costs over recent years have increased that per acre cost to at least \$500. Applying that average cost to the estimated 2.3 million acres of unrestored surface-mined land existing in 1970 would result in a basic reclamation bill of \$1.2 billion. Recent Bureau of Mines data on surface reclamation work in the Appalachian States under the Appalachian Act indicates a per acre cost of \$1,100 to return surface-mined land to productive use. Some special projects have involved costs as high as \$15,000 per acre. Reclamation accomplished as part of the mining cycle is significantly cheaper.

These calculations of surface-mined-land reclamation do not take into consideration the complex, vexing and unresolved legal issues centered on the ownership rights of unreclaimed lands. Over 90 percent of these lands are in private hands. In some cases, owners do not wish to have their lands reclaimed, especially if rehabilitation would make remaining mineral reserves less accessible. In other instances, the expenditure of large sums of taxpayer's dollars for reclamation might result in excessive profits for the owners in terms of enhanced land values. Needless to say, public acquisition of these lands either through negotiated purchase or condemnation, would also add substantially to total reclamation costs.

Stabilization is the principal means we have today of coping with accumulated mine wastes. The Bureau of Mines has had success recently in the development of new and more economic means of stabilizing wastes deposited on level ground, but the technology for stabilizing wastes placed on precipitous slopes is still lacking. Although costly stabilization can ameliorate the harmful off-site effects of some banks, the banks themselves will remain, often preventing the return of the land occupied to more productive use. Even if more advantageous sites could be found, the cost of moving the waste to them would be, with our current methods of materials handling and movement, prohibitively expensive. Additionally, ownership problems associated with waste banks tend to be even more complex and troublesome than those connected with unreclaimed surface-mined lands. This is largely because so many waste banks still retain sufficient mineral values to make them worthwhile long term holding.

Burning waste banks present special problems and require much more costly solutions. Based on costs experienced by the Bureau of Mines in recent demonstration projects for existing anthracite refuse bank fires, suppression of the 292 known burning coal refuse banks throughout the United States could cost as much as \$250 million.

Placing a price tag on the sealing of abandoned oil and gas wells is also a rather difficult task, particularly as their number and exact locations are in

large part unknown. We do know, of course, that they number in the tens of thousands, and can be found in almost every State. Experience of the Bureau of Mines in Appalachia has yielded data indicating an average sealing cost of \$2,500 per well there.

We have been discussing costs of considerable magnitude, on an absolute and isolated basis. Correcting damage caused by past mining activity is just one of a number of environmental problems the solution to which requires Federal funds. Before we can justify a massive Federal program to rectify past mining damages, a detailed cost-benefit analysis must assure that this undertaking can be justified when compared with other environmental programs to cope with similarly pressing problems such as water and air pollution. Nor can we, acting principally with a legitimate concern for the best management and conservation of our natural resources, neglect to determine how this rehabilitation program, or series of other environmental programs, ranks in importance with programs dedicated to the development of our national human resources.

From much of the material which has been mentioned today, it should be apparent that we are currently handicapped in reclamation attempts by a lack of more precise knowledge concerning the exact location—and indeed in some cases of the overall extent—of past mining damages. Neither have we developed as efficient techniques of repairing these damages as we would like.

We believe that much of this needed knowledge and technology will be gained under the programs established by S. 993 and may then be brought to bear on the rehabilitation of past-mined areas. The requirements of S. 993 for regular monitoring of mined areas, and the assistance offered for the inventorying of mine areas affected by present and future mining operations, will result, also, we think, in the compiling of a significantly more accurate catalogue of past mining damages. We also anticipate that the research program envisioned in S. 993 will greatly expand the variety and effectiveness of reclamation techniques.

For these reasons we again urge that you give your first consideration to the Administration's proposed S. 993 as the most practical approach at this time to the problem of reclaiming areas disturbed by mining operations.

Senator Moss. It is now past 12 o'clock, and we have a scheduled vote. We will be in recess now until 1:30 p.m.

(Whereupon, at 12 noon, the hearing was recessed, to reconvene at 1:30 p.m., the same day.)

AFTERNOON SESSION

Senator HANSEN (presiding). The committee will please be in order.

Senator Randolph, chairman of the Public Works Committee, has to go very shortly to chair hearings before his committee. We would like at this time to call on Senator Randolph.

STATEMENT OF HON. JENNINGS RANDOLPH, A U.S. SENATOR FROM THE STATE OF WEST VIRGINIA

Senator RANDOLPH. Mr. Chairman, I am appreciative of the courtesy—also perhaps it is an adjustment of other witnesses to allow me to express my concern over the matter which you have been discussing, that is, the problems that are incident to surface mining.

I want to stress that I do believe that the time has come for the formulation of a national environmental policy for surface mining. As a West Virginia Senator, I am aware of the potential adverse environmental effects of improper surface mining for coal. But it is also important to remember that the economy of our State is closely tied to the mining industry.

After many years of neglect, however, in 1966 the State of West Virginia, in response to conservation and ecological concerns, enacted one of the Nation's strongest laws governing surface mining for coal. Although enforcement of the law has been criticized for a variety of reasons, there has been a steady improvement in surface-mining practices in our State. Land abuses are less severe.

The principal remaining concern is acid mine drainage from abandoned and orphaned surface-mined lands. In response to this problem, and under my sponsorship, the Congress provided for areawide demonstration programs to control and abate mine drainage pollution. These provisions are strengthened in the recently passed Senate version of Federal Water Pollution Control Act Amendments of 1971.

Yet, West Virginia's experience with the adverse effects of improper surface-mining practices can be extended to many other areas of the country where such mining also is a major activity. Thousands of miles of streams have been adversely affected. The water quality in many of these areas is severely impaired by mined drainage from both active and inactive mines. Affected streams are unable to support fish and wildlife in appreciable numbers and are generally unsuitable for use as public water supplies and for industrial or recreational use.

Water pollution control efforts, however, center too much on treatment of a problem after the fact, after improper surface-mining operations have been permitted to do too much damage.

If the adverse effects of surface mining are to be avoided, it is requisite that there be a prospective analysis before a surface-mining operation is initiated. Preservation of environmental quality during and reclamation of lands following strip mining is a matter of environmental management rather than pollution control by treatment after the fact.

Critical to the whole operation is continuing surveillance and monitoring of surface-mining procedures and land reclamation projects. Implementation, however, should rely on strong State laws and effective enforcement consistent with Federal guidelines and minimum standards, which should provide sufficient flexibility to reflect regional characteristics of the potential problem.

Yet, the Federal Government should have sufficient authority to enjoin improper surface-mining operations where State enforcement is inconsistent with Federal guidelines and minimum standards. There is ample precedent for this in Federal law now in being for the control of air and water pollution.

I propose that careful attention be given to the question of whether or not surface-mining legislation under consideration in the Congress should require that the Environmental Protection Agency or the Department of Interior promulgate criteria and minimum standards governing surface mining which would provide for the control of the adverse environmental effects.

I would support provisions modeled after national environmental statutes which provide for State formulated implementation plans. Such plans should provide for permit systems to implement Federal minimum standards. Unless disapproved by Interior and/or the Environmental Protection Agency, the State implementation plans also could serve as the Federal implementation plan.

I recognize that there is some disagreement on the respective roles of the Environmental Protection Agency and the Department of Interior in the establishment of national criteria and minimum standards.

The Environmental Protection Agency, however, is this Nation's leading agency for the implementation of Federal environmental policy. But this does not preclude the establishment of the Federal permit program within the Department of the Interior. Such programs could be modeled after the administration's joint Environmental Protection Agency-Corps of Engineers permit system established and administered similar to the program for Federal lands.

In the case of Federal and Indian lands, concern is for the depletion of a nonrenewable resource either publicly owned or in public trust. The Federal Government is acting as the administrator and steward for their development.

Therefore, I recommend cessation of the Federal issuance of leases for surface mining pending the promulgation of Federal criteria and minimum standards. At that time, all applicants for leases to surface mine public lands should be required to file an environmental impact statement in accordance with the provision of the National Environmental Policy Act of 1969.

Existing permittees and licensees should be allowed a maximum of 1 year to comply with the act. Otherwise, their permits or leases should be considered for revocation. It would be possible to obtain an economic advantage by devastating these lands in the absence of a requirement of proper management techniques.

In addition, the Secretary of the Interior probably should be required to prepare an environmental impact statement, in accordance with the National Environmental Policy Act, on the cumulative regional effects of surface mining associated with the issuance of Federal permits and leases and the Bureau of Reclamation water permits for coal stripping on public lands in the West.

Many areas of this Nation, however, are now faced with repairing the devastation of past practices which exploited the resources of such regions as Appalachia and such watersheds as the Monongahela River Basin. Restoring orphaned and abandoned surface mined lands is a special problem requiring Federal, State and local ingenuity and regional planning.

Steps are being taken to develop the necessary technical and institutional mechanisms. The Environmental Protection Agency, under the provisions of the Water Quality Improvement Act of 1970, has the leading role. This program was strengthened in the recently passed Senate amendments to the Water Pollution Control Act, which authorize \$30 million for demonstration programs to control water pollution resulting from mine drainage.

The program represents another step forward in this Nation's efforts to correct neglect during the past. Concern, however, must be directed to a future when surface mining will serve as a major source of energy resources for the next 40 years. Obviously, there is need for environmentally sound surface mining and reclamation planning.

Solutions must rely on carefully conceived environmental management techniques. Practices should not be allowed which cause water pollution, destroy agricultural lands, stop recreational use of areas, and generally prohibit future beneficial use of an area.

Land, like air and water, is a basic natural resource. Without useful land, our society and our Nation cannot continue to be economically sound and physically healthy. Reduction and prevention of the environmental devastation which can accompany improper surface mining is essential to improving the quality of life and establishing diversified economies that are essential to sound economic policies.

I thank you very much.

Senator Moss (presiding). Thank you very much, Senator, for your fine statement.

We know of your long interest in this field and your leadership in the Public Works Committee, from which our water pollution and air pollution acts have come. No one is more knowledgeable nor more energetic in the field of pollution abatement than you are, and as you point out, land is a vital resource as much as water and air, and what we are talking about is how we are going to be able to preserve and keep from abusing our land at the same time we develop our energy resources which we need, of course, to have our economy continue to expand.

So, we are appreciative of your coming here and giving us your views for the record in this case, as we look into this problem of surface mining and disturbance of the land.

Senator JORDAN. I, too, welcome the distinguished chairman of the Public Works Committee. He has made a continuing constant contribution to this area of pollution abatement and we value his counseling in this committee. You have made a very fine statement.

Senator RANDOLPH. I thank you, Senator Jordan.

Senator HANSEN. I, too, would like to congratulate our colleague for his in-depth study of the problem and the serious consideration he has given it.

Senator RANDOLPH. Thank you, Senator Hansen.

Senator FANNIN. I, too, congratulate you.

Senator RANDOLPH. I thank you, too, Senator Fannin.

I have attempted always to have the members of the Public Works Committee very cognizant of the efforts you have been making in the Interior and Insular Affairs Committee. We have had a very close relationship, and I want to have that not only continued, but strengthened.

Senator Moss. Thank you, Senator.

We have also sitting with us this afternoon Senator Byrd. I understand he is interested in the demonstration we are going to see now given by Mr. Jake Stewart and Mr. Robert Hurst.

Will those two gentlemen come forward?

STATEMENT OF DR. ROBERT HURST, ACCOMPANIED BY JAKE STEWART

Dr. HURST. Thank you, Mr. Chairman. It is a pleasure to be here. I have a prepared statement which I ask be included in full in the record, and I will summarize the testimony at this time.

You gentlemen are well versed in the cause and effect of surface subsidence, you are aware of the impact of such subsidence when it happens in developed areas. We would like briefly to review the old method that we have used to try to solve these problems, prevent subsidence.

We can do nothing but try to reclaim the lands once subsidence has taken its toll. Basically, we can classify the potential subsidence areas according to two types of mines. Man can get in there and take tools in there and support these mines, so these mines do not offer a big problem in solving, except it takes funds.

Unfortunately, the most difficult ones are those mines which are gaseous, too hazardous for people to enter, or they have become filled with water, preventing people to enter.

In the past, there has only been one method to try to solve the problem in this area; that is, to drill holes from the surface on to slush in, and that is to take a stream of water and putting solids into the water.

Mr. Stewart will start filling these up and show you the method.

Mr. STEWART. Over here we have simulated pillars left in the mine. Here we tried to represent the streets, alleys, buildings and public areas.

The common method, you would have to have access to get a drilling machine in, so normally the streets are used.

I am going to pour some sand in here and give you an idea of what happens. The only energy force we have is that of gravity. This will continue to develop until the piece of the cone gets up to the base or roof of the mine. At that time it will choke it off and can accept no more solid. We did fill this partly before we brought the model in here.

This caused these to flatten out from the nice angles you see here to this mounted effect. The same thing can happen in a mine, if using this method the fill is not complete and you do have the opportunity for fluid movement. Movement in the water and mine can cause these cones to flatten out.

If I might have a minute to flush this thing out, we will show you how the process works.

Before I flush it though, let me mark the shape of the material. This one will be about the same way over here.

(Drawing.)

Dr. HURST. The new technique developed was on behalf of friends and neighbors of the people of the city of Rock Springs, Wyo. They took it on their own, working through their private company to develop a technique to help the citizens of Rock Springs, if it could be done with the technology they have.

We have developed a process where we feel we can completely fill the voids in these mines, eliminate the problems of subsidence above, and we can do it from a single point of covering a large area. Mathematical projections indicate we can cover perhaps from any one single bore hole, 40, 160, perhaps one section from a single hole.

By doing this, of course, we save lots of time and wear and tear on people and material, so we should be able to do it much more economically than having to drill hundreds of holes. For example, in a 40-acre plot, if you did it the old method and you can get access to the plot, it would take several hundred holes on a 40-acre plot. This is expensive drilling, because a rock is difficult type of drilling. The costs are very high.

We think this process will be inexpensive in comparison. For example, the first project, a small demonstration project at Rock Springs, cost more than \$10 a cubic yard. The next project under study and really near time to start is at Scranton, Pa., and in that

case it looks like the costs are going to be about \$3 a cubic yard. Again, it is a relatively small project, still bigger than the others.

If we are talking about 1 million or 2 million cubic yards which is necessary, prices will come down accordingly.

Mr. STEWART. Now, some other features of the model, we use the same water filled environment, the only thing we have done differently is that we are going to add some energy to the system. We do that with a small electrically driven pump. Here we have a reservoir filled to this level with the water and the same sand you saw before is now in the reservoir with the water.

We have a little laboratory fixture to put the sand in suspension, the slurry, if you will, and the pump can pump this slurry and inject it into the piping system and into a single borehole which we have in a remote out-of-the-way place in an alley.

The slurry is being prepared and singled here. Now, the material is being injected under dynamic conditions. It moves down through the water fill environment, when it hits the floor of the mine you get a drastic change in velocity. It is no longer dynamic suspension, gravity begins to take effect.

As the height of the mound builds up we have a critical velocity redeveloping. The cross-sectional area here and here is now together equal to that of the borehole so the sand goes into a dynamic suspension and is carried up and over out here, much the way snow drifts migrate in Wyoming and the way sand dunes migrate in the desert.

The model will continue to operate like that indefinitely, however we are limited to laboratory scale. So, when the edges of this mound gets over to the edge of the model, that is all we can do. We have to shut it off someplace.

Dr. HURST. Any film material which has strength in a packaged condition such as this that will support the weight of the rock as it tries to fall is good. In the case of the Scranton project, we intend to use the old refuse bank which now is a sore eye in the area.

So, we will not only be filling up the mine void, we will be reclaiming that land where the refuse pile is sitting. We will be getting rid of the refuse pile, eliminating fires that occur later in the refuse piles.

In the case of Wyoming, sand dunes are readily available, and any waste material that has some strength can be used here.

Senator Moss. How small does the sand have to be? Do you have to grind up the refuse piles?

Dr. HURST. Most of them would have to be crushed to some extent because there are some big boulders. Either that or they would have to be screened out. Each refuse pile will be considered.

Actually, there are pumps being designed that will handle up to an inch and a half of material. Actually, the Scranton project, we are trying to limit the size of the pumps to a quarter of an inch and probably some half-inch material during that process which minimizes the cost. But as the pumps improve, we will be able to use bigger materials.

Senator Moss. And you estimate you could do a whole section on one hole?

Dr. HURST. Yes, sir. Each would depend somewhat upon the size of material available or the density and the amount of horsepower we could put into a location, depending on cost and all of these things.

You kind of compare these and see which is the best process. Maybe

it is cheaper to move into another hole and fill 40 acres at a time than to fill one hole. But in any case, it would be a small number of holes as compared to the old process.

Senator Moss. When that has gone to its maximum spread, isn't there still a little space left on the top of the fill?

Dr. HURST. When we get to the point where we are near the end of the job, we start reducing that velocity so we come back from the end clear back and fill up the hole.

Mr. STEWART. I think I can illustrate that. All we have to do is decrease this velocity so we lessen the effects of the dynamics, and instead of having the sand roll over the end of the pile, we could have it work backward.

Dr. HURST. It would depend somewhat on the thickness of the seam. Then it would depend on the distance between the roof of the mine and the surface of the land.

Normally, the amount of subsidence you get at the top runs 20 percent to 30 percent of that void below. In other words, if you had an 8-foot seam below, then you might get 1 or 2 feet of drop at the surface, you see.

So, now, as you fill that up to where you only got a few inches, that subsidence would be so small that most any house foundation or anything could take it, even if you did not get it completely filled up as far as an inch or something like that is concerned.

Senator Moss. What size motor do you have to have to drive this slurry?

Dr. HURST. For example, at the Rock Springs project, we used four 500-horsepower diesel engines driving 300 barrels per minute blenders and pumps. These pumps are in our company. They are available. We use them in the oilfield.

For the Scranton project, because we expected some acid mine water, we went to stainless-steel systems. They are more expensive. As it turns out, at the Scranton project, that particular water is not going to be acid, but we expect to use that equipment in mines where the water will be acid.

So, it can be used in either way, since it is stainless-steel equipment.

Senator Moss. What was your cost figure earlier?

Dr. HURST. The Rock Springs project of 20,000 cubic yards ran slightly over \$10 a yard. It was about \$11 per yard.

Projected now, the Scranton project of a little over 300,000 cubic yards will be about \$3 a cubic yard. Several things cause this. Just because the job is bigger—our setup charge is about the same, so it is just time and material, I would say.

Again, that project is more expensive, and we would expect in most projects, because we are doing lots of things not to disturb the neighborhood, like buried lines and replacing highways and streets and so forth, and I am sure in many cases people would live with these inconveniences a short time in order to reduce these costs.

Senator Moss. Senator Hansen?

Senator HANSEN. I would like to yield to our distinguished guest from Virginia.

Senator Moss. All right.

Senator BYRD. Thank you, Mr. Chairman and Senator Hansen, and Senator Fannin.

I just want to say that mining is very important to the economy of the State I have the responsibility of representing. I would like to point out that at least four companies are here today, two representing Reynolds Metal and two others from Grundy, Va., and Buchanan County.

I want to invite the committee's attention to the fact that in Buchanan County, in the far southwestern part of our State, is the deepest coal mine in North America. So, as a Senator from Virginia, I have a keen interest in this problem, the problem the committee is considering, and I appreciate the committee allowing me to sit in this afternoon. I will not be able to stay for the entire meeting as I have another meeting that I must attend, but I thank you, Mr. Chairman and gentlemen of the committee, for your hospitality.

Senator MOSS. Thank you.

Senator HANSEN. Thank you very much.

Senator MOSS. Senator Hansen?

Senator HANSEN. I yield to my colleague.

Senator FANNIN. Thank you, Mr. Chairman.

I am just wondering about the economic type of system in some of the towns we have in Arizona. They are ghost towns now, and they have been abandoned because of the subsidence that has taken place and the fear of what might happen.

But in those mines there are just miles of just caverns, and I was just wondering whether it would be possible in that type of a condition—

Mr. STEWART. I would suggest that you have a very logical situation there with the enormous pile at Miami. This material would be ideal. In fact, it would be a wonderful way of getting rid of it.

Senator FANNIN. Would it transfer back to the distances that would be necessary?

Mr. STEWART. We have never had the opportunity to expand to full project dimensions to find out what our capabilities are. We have every reason to believe we could pump literally for miles.

Senator FANNIN. Well, there are quite a number, most recently the area around Jerome, and they are just going to town because of that, but they are trying to have rehabilitation to the greatest extent possible. This is certainly an effective unit, and it is commendable what you have been able to do. It is fantastic to see it demonstrated.

Senator HANSEN. Mr. Chairman, I appreciate very much the Dowell Co. being here today and giving us an opportunity to view firsthand a simulation of a project that actually took place in Rock Springs. I note with considerable pleasure that Mr. Corgan is here again this afternoon. He can tell you far more skillfully and scientifically than I just what was done out there.

There are several questions that I think might be helpful to clarify what took place in Rock Springs.

First of all, and I would like to ask unanimous consent, Mr. Chairman, that if Mr. Corgan or others from the Bureau of Mines, would like to participate at this moment in the panel, that they be permitted to do so.

Senator MOSS. Why, surely, they would be welcome.

Senator HANSEN. As I understand it, what happens in these cavities left underground after material has been removed is that there is a

solid slab of rock or semisolid slab above the deposit which has been removed from these abandoned mines. In time, gravity takes its toll, and chunks of the rock of the ceiling start to fall.

Two things occur. One, there is a building up of the accumulation of the debris that falls from above. It is not as solidly impacted as it was when it was in place so that the void is filled by less material than was removed. Two, as the ceiling falls away, given the ground above the ceiling of the mine is weakened, in time there will be a subsidence that occurs that will be visible on the surface. Is this generally the situation?

Mr. CORGAN. That is correct, Senator Hansen; in fact, you explained it as well as I could explain it myself. When subsidence has occurred, the cracks in the rock strata go up to the surface.

What you find in the coal mines after the area has been mined are pillars that are left to support the surface. Because of these coal pillars there is an imbalance created. In other words, the pillars are supports that are left in the mine and have a tendency for a period of years to hold the whole roof up. Our experience over a period of many years has been, it can be 30 or 40 years, before there is a general weakening of the pillars. When the pillar weakens, the strata break. That is what causes subsidence.

If we used a mining method—and we do have such mining methods, where all of the coal is taken out at one time, and the whole area comes down, the overall effect on the surface is not so serious. You would have subsidence but it would be in a more even way.

Senator HANSEN. Then I am brought to my next question: The older technique of trying to dump a dry material, sand or finely sized gravel, whatever, down boreholes, resulted in a lot of little conical accumulations of the substance being used. But you wouldn't nearly get the support that you need to be afforded by this new technique demonstrated today; is that right?

Mr. CORGAN. You are very correct in that. We have drilled thousands of boreholes and conducted many subsidence projects, as Assistant Secretary Dole said this morning. But our problem has been drilling too many boreholes and putting refuse down. It comes at the bottom, just like an ice cream cone upside down. As a result the entire void is not filled.

In fact, we rarely can fill more than 35 percent of the mine voids by this old technique of blind flushing because we cannot fill the voids under buildings or houses. That is what this new technique is supposed to do.

Senator HANSEN. I would ask you, Dr. Hurst, from your experience and understanding of this technique, do you know that when putting this slurry into the void under this dynamic pressure, it is the nature of the material and the forces of nature to fill around pillars and fill in all of the void as nearly as could be determined?

Dr. HURST. Yes; that is correct.

Of course, the pattern will be somewhat controlled by the mine shape itself. Had there been walls built within the mine the fluids can't move through and it will work around these. So, the pattern will not be always on a true radius.

Senator FANNIN. Where you have the opportunity, do you have any experience as to what length this would travel through a tunnel into another cavity? I mean, is it possible—it depends upon the material, I would imagine?

Dr. HURST. The only project we have done was one at Rock Springs, and I guess the greatest distance from the point of injection that you found sand was—

Mr. CORGAN. About 360 feet.

Dr. HURST (continuing). And that was the end of the job. We were not shut down, but we had just finished all of the material.

Senator HANSEN. There the situation was that you had a certain budget and you consumed all of the materials that were provided for by the budget. Is that the fact?

Dr. HURST. We stockpiled 3,000 cubic yards of materials.

Senator HANSEN. You didn't have to push the last of it down with your thumb, did you?

Dr. HURST. No; it was moving just as freely as when we started.

Senator HANSEN. Can you give us the lateral distances that you think this material might flow?

Mr. STEWART. I guess the best analogy I can offer is a pipeline that transports slurry some 240 miles, I believe, in Arizona.

Really, we are talking about only a pipeline. Once it reaches this equilibrium condition, then you have, in effect, an artificial pipeline. So, we have no reason to doubt that we can go a long way.

Senator HANSEN. Where you encounter a problem of subsidence, and obviously it is most severe where there are buildings and where people are congregated closely as the situation in Wyoming above these mined out voids, there are a number of advantages, are there not, to this technique as contrasted with the earlier techniques?

I think you observed that for one thing the old approach of trying to drop dry materials down a hole is limited to the availability of drill hole sights; is that correct?

Mr. STEWART. That is correct, and in addition to this the problem is that the maps of these old mines are grossly in error. So, you may not hit a void, so you wasted that drilling expense.

Assuming you can hit a void, you are limited to that one pile of sand under it. That, compared to this method which to our best determination does fill every available void, it works on a differential pressure phenomena and always causes its own adjustment.

Senator HANSEN. Does the presence of flammable gas present a dangerous hazard in this type of backfilling?

Mr. STEWART. I can think of none, because we are dealing with a closed system. Obviously, if you found some gas under pressure during drilling of the injection hole or the water supply level or whatever, yes, it would be normal to that in the gas industry.

Senator HANSEN. But as far as the risk to human life goes, it would be far less under this situation than would be the case if you are trying to send men underground, Dr. Corgan, to explore around and probe to see where the holes are, wouldn't this be true?

Mr. CORGAN. It would be very dangerous to have men underground; yes.

Senator HANSEN. And if you encounter a situation where you have water in the void, are there advantages as you understand this system compared to the earlier technique of dumping dry material down?

Dr. HURST. Yes. This system will work beautifully in water filled mines, because you have your water source already and you just use what is there.

Senator HANSEN. Mr. Corgan, do you think this technique with sufficient capacity being encountered does hopefully offer the cheapest way, the most effective way of filling mine voids of any way you know now? What are your feelings about that?

Mr. CORGAN. I think it does. In fact, I know of no other way that would be superior to this method at the present time.

In some of the projects we are currently conducting, we have been using the old method of blind flushing. As indicated, it is a rare thing with this method when you can fill more than 35 to 40 percent of the underground voids because the material does not reach them. It generally does not reach voids under homes or buildings.

Now, take Rock Springs as an example. I think if we were to go into Rock Springs with the old technique, we would probably have to drill from 2,000 to 3,000 holes to get material down. With the new technique there would probably be 14, or a few more holes. There are 14 critical mine areas beneath about 200 acres of land in Rock Springs. About 1,200 acres all together have been undermined, but 200 acres are critical.

Senator HANSEN. Just to give a little prospective to what we are here discussing, have you had occasion or have people under your direction or with whom you are associated make estimates taking into account the reduced overhead cost by filling larger voids? Have you had occasion to make estimates of the cost to fill voids and make safe the serious subsidence problem areas in Rock Springs using the Dowell technique?

Mr. CORGAN. Well, these people have submitted estimates on that with which we are familiar. Dr. Hurst may want to comment on that?

Mr. STEWART. I don't remember the figure, it was about \$3 million.

Mr. CORGAN. It was \$3 million, that is what it was. It was about \$3 million for the 14 critical areas.

Senator HANSEN. Would you have any idea how much damage might conceivably result, say, within the next 40 or 50 years to the city of Rock Springs if nothing is done?

Mr. CORGAN. I believe that the mine area that is overlain by the 200 acres that we referred to, will very definitely subside. I don't think there is much question about that.

Whatever is above the 200 acres, such as houses and buildings adjacent to the area where we conducted this demonstration, can expect to suffer about the same kind of damage. This has been our experience in other parts of the country.

Senator HANSEN. Dr. Hurst, do you have any further observations that you would like to offer or comments you would like to make? We would certainly invite them.

Dr. HURST. No, Mr. Chairman.

Senator HANSEN. How about you, Mr. Stewart?

Mr. STEWART. I would be happy to try to answer any additional questions.

Senator HANSEN. In order to try to bring the demonstration into clear and understandable perspective, I will hold the hearings open in order that we might review the testimony and if there are points that should be discussed that have not yet been touched upon, perhaps questions could be submitted to you gentlemen in writing and we can get your response. I should think it would be relevant also to pull together some of the testimony from other agencies.

I believe Housing and Urban Development has been involved in the city of Rock Springs, and I would imagine they might be able to give us some idea of the potential damage that could result from doing nothing to abate this problem.

I believe in order to better understand the need for this legislation that we should have this information made part of the record.

If there are no further questions, I want to thank you gentlemen very much for your appearance here this afternoon. I can assure you the people of Rock Springs are keenly aware of the possibilities this new technique holds for bringing relief to them. There are no other persons in Rock Springs who want to have similar experiences to those living in the area that has been settling.

I do hope we can get on by making, first of all, the help from the Government available to people in any one of the 50 States, wherever they may be, and we can expand upon the help that has come from this Appalachian type of program. I want to compliment you and thank you again, Dr. Corgan, for your participation in the hearing, and thank Mr. Stewart and Dr. Hurst.

Mr. STEWART. Thank you.

(The prepared statements of Senator Hansen and Mr. Hurst follow:)

STATEMENT OF HON. CLIFFORD P. HANSEN, A U.S. SENATOR FROM THE
STATE OF WYOMING

At this time I will insert in the record a report entitled "Demonstration of a Technique for Limiting the Subsidence of Land Over Abandoned Mines—Technical Report". This report was prepared to meet requirements of the Department of Housing and Urban Development which provided a demonstration grant to help finance the project at Rock Springs, Wyoming. While the report I submit is a draft of the final report which will be available next spring, and should be accepted as such, it does reflect the knowledge gained by experts who monitored the Rock Springs project. It is important to note the social impact of the subsidence problem in Rock Springs and the need to provide a solution to that problem.

STATEMENT OF R. E. HURST, TECHNICAL DIRECTOR, DOWELL DIVISION OF THE
DOW CHEMICAL CO.

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify today on the technology of mine filling methods.

In previous testimony, you have been made aware of the problem of subsidence and the conditions existing in abandoned mines which lead to the problem. I would like now to describe the methods which have been used in attempts to limit the damage wrought by subsidence.

To prevent the collapse of overlying strata into mine voids, the voids must be filled with solid materials to help support the mine roof. The following methods have been used to place solid fill materials in mine voids:

- Controlled flushing;
- Open-sluice blind flushing;
- Closed-system blind flushing.

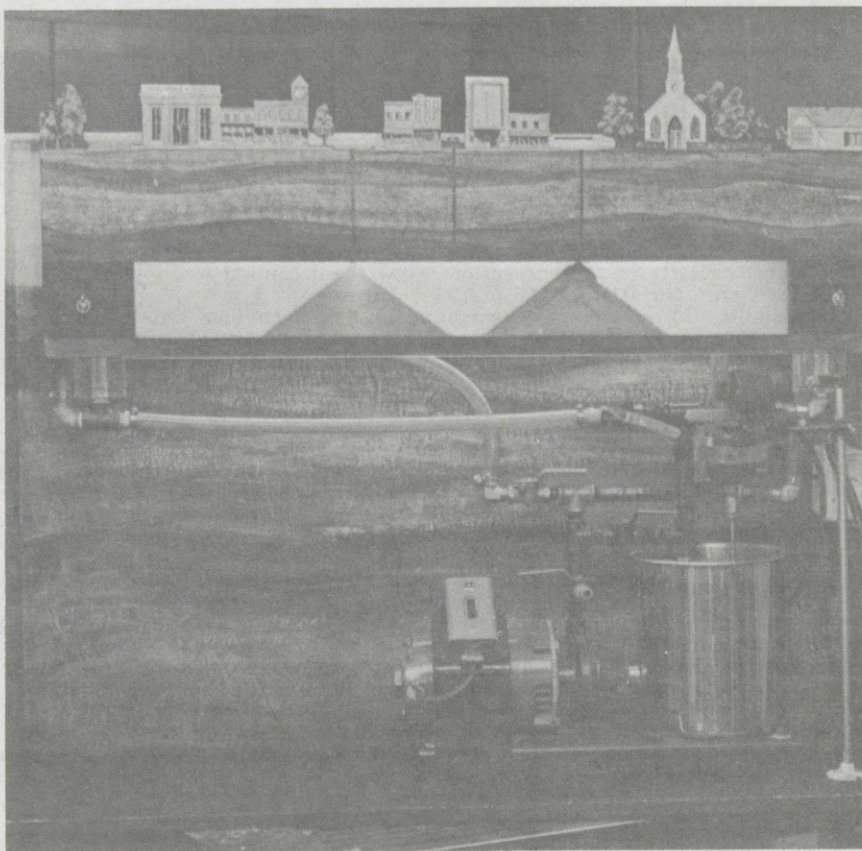
If access to a mine for workmen is available, controlled flushing can be used. This technique consists of introducing a large pipe into the mine from the surface and breaking this off to several feeder lines to different work areas or levels in the mine. A slurry containing from 30% to 50% solids is fed into the large pipe and distributed to emplace the solids in the mine. Controlled flushing results in almost complete filling of the voids and is considered to be among the most effective methods of subsidence control.¹

¹ "Demonstration of a Technique for Limiting the Subsidence of Land Over Abandoned Mines," a Technical Report prepared by Candeub, Fleissig and Associates in association with Gordon E. Howard and Johnson-Farmelia and Crank, Inc., June 1971.

A far more difficult problem is encountered when the mine voids are inaccessible to workmen because of hazardous conditions such as impounded water. An open sluice technique of blind flushing has been commonly used to control or limit subsidence in these cases. In its most common form, this method consists of drilling an injection hole from the surface into a mine void. A slurry of water and screened solids is then sluiced into the hole until refusal. This results in a conical shaped pile of solid material which gives some vertical support to the overlying strata and, if adjacent to pillars, shores up the pillars. Figure 1 is a photograph of a model used to demonstrate blind flushing. The conical shaped piles of material resulting from the open sluice technique are evident.

The quantity of solids that may be injected by the open sluice technique through a given hole and the size and shape of the resulting cone depend upon the natural angle of repose of the materials in the medium within the void (water or air), the size of the void and the dip of the mine bed. Only about $\frac{1}{3}$ of the void in a given length of mine room normally is filled by this technique.

The open sluice technique of blind flushing has many disadvantages. Due to the small amount of void that can be filled from a single injection hole, application of the technique generally requires the drilling of a large number of injection holes that must be relatively closely spaced. This is difficult to implement since injection holes often cannot be drilled in critical locations because buildings and other structures are in the way or because consent of the owners cannot be obtained. It appears that the cost considering the number of holes required and the hazards involved, would be extremely high per cubic foot of fill material placed by the open sluice technique.



Finally, while the technique may limit the potential extent and severity of subsidence, we do not feel that the reduction in volume of the void is always great enough to prevent serious damage at the surface. The unfilled portion of the void, in many instances, may still permit breakage to occur for too great a distance into the overlying strata.

Another technique for filling inaccessible mines was recently developed by the Dowell Division of The Dow Chemical Company. This process also may be classified as a blind flushing process. It differs from the open sluice technique in that energy is used to achieve a dynamic suspension of the solid fill material particles. Also, a completely closed system is used from the point of suspension mixing to the bottom of the injection hole.

Basically, the process uses a blender which accepts fluid from a supply source such as the mine itself, an adjoining mine, river, etc., and solid fill material particles from a conveyor and hopper. The blender thoroughly mixes these materials into a suspension. Each particle of fill material is enclosed by fluid so that friction is minimal. The suspension is piped continuously from the blender to a pump and then to the bottom of the hole where it enters the mine void at a relatively high velocity compared to the open sluice technique. The velocity must be great enough that the fluid will suspend and transport the solid particles.

As the suspension first enters the mine void from the injection hole, its velocity drops rapidly and the solid material settles out to form a doughnut-shaped mound at the base of the borehole. As the height of the mound builds up and approaches the mine roof, velocity of the suspension through the narrowing channel increases and solid particles are transported to the outer limit of the mound. Here again, velocity decreases and solids are deposited. Deposition continues in this manner and the mound of fill material builds outward into the mine voids. Figures 2A-2D are photographs of the model demonstrating this type of deposition. Succeeding stages of deposition are shown.

As resistance to flow of the suspension develops in one direction, a new channel is formed in another direction along a path of less resistance. The channel will eventually seek out all voids and fill them wherever it terminates. Figures 3A-3D are photographs of a horizontal model showing deposition of solids as the channel seeks out and fills the voids. As the mound of fill material builds outward into the mine, the flow channels between the mound and mine roof become longer and resistance to flow increases. When this resistance, combined with resistance in the pipe, becomes great enough to reduce velocity of the suspension below that required to support the solid particles, transportation of the particles will cease.

Feasibility of the closed system blind flushing technique was demonstrated late in 1970 at Rock Springs, Wyoming. Subsidence had already occurred in this city resulting in severe damage to dwellings and buildings and a drastic decline in property values. The intent of the Rock Springs project was to fill a 2½-acre area of the mine underlying the city.

The demonstration was conducted according to the procedure described and 20,000 cubic yards of sand were placed in the mine as support material. The demonstration showed that the process is capable of filling a greater portion of an inundated mine void—both vertically and horizontally—from a single borehole than has been realized by other known blind flushing techniques. In fact, the fill extended more than 250 feet from the injection hole in some directions in the Rock Springs demonstration.

Currently in the planning stages is another project with which we hope to further demonstrate the capabilities of the closed-system process.

At Scranton, Pennsylvania, we plan to crush and use as fill material the Eureka Bank, a large eyesore presently occupying several acres of valuable surface area. We feel this project will accomplish the following objectives:

- Limit subsidence within an area of the city by filling underlying mine voids.

- Eliminate an eyesore by disposing of unwanted materials.

- Reduce air pollution now attributed to dust from the Eureka Bank.

- Reduce acid mine drainage believed caused, in part, by water filtering through the bank.

- Allow reclamation of valuable surface area.

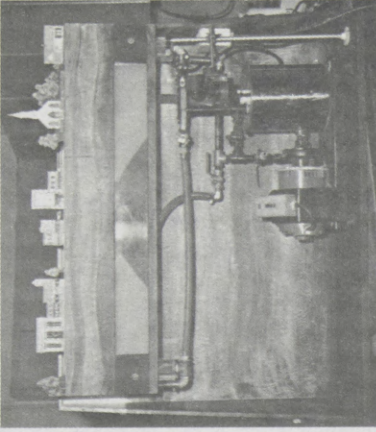


FIGURE 2B

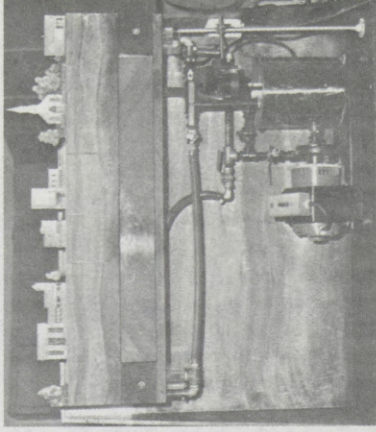


FIGURE 2D

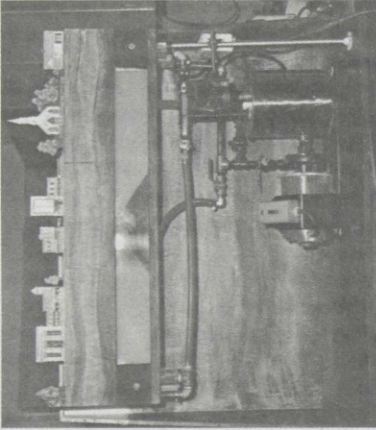


FIGURE 2A

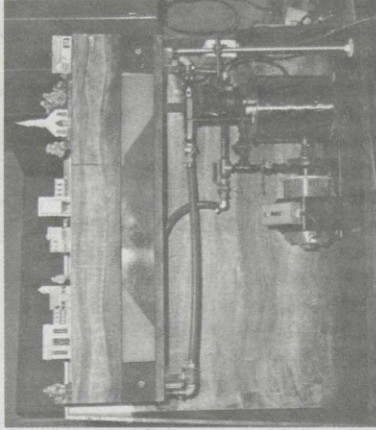


FIGURE 2C

FIGURE 2 - Model showing various stages of deposition of fill material by closed system technique of blind flushing using a single borehole. More complete filling of the voids - both horizontal and vertical - is obtained by this technique than has been obtained by other known blind flushing processes.

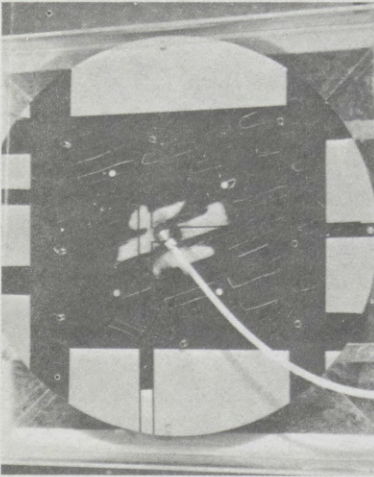


FIGURE 3A

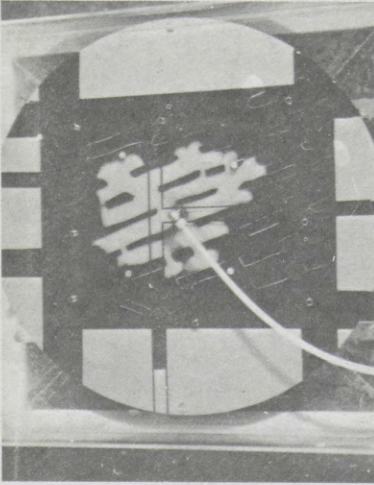


FIGURE 3B

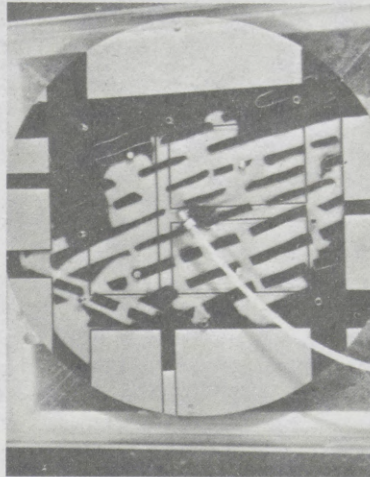


FIGURE 3C

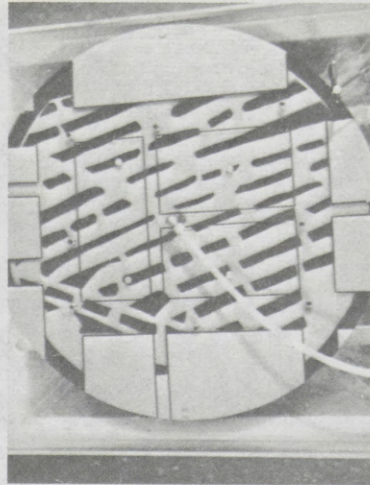


FIGURE 3D

FIGURE 3 - A horizontal model of mine voids, pillars and passages. Suspension (fluid and fill material) flows through a channel between mine roof and deposited fill material always toward the point of least resistance. Channel will eventually seek out and fill all voids, flowing and filling around pillars, rubble, or other obstructions.

The added benefits which may result from the Scranton project lead us to believe that the new process may be applicable to other environmental problems as well. Although it has yet to be demonstrated, the process may be effective in controlling mine fires. Also, by variation of fluids and fill materials, it may be possible to drastically reduce acid mine drainage. Finally, the process might help alleviate another problem that is becoming critical—that of trash disposal. Properly shredded and crushed solid wastes can probably be used as satisfactory fill materials in many projects.

The one question remaining to be answered is that of economics of the closed system blind flushing technique. The Rock Springs Project was a first-of-its-kind demonstration. Mobilization costs, therefore, were high. Several exploratory and observation holes were drilled that would normally not be required and further added to an overall high cost. Research of the process and its uses is continuing, however, and we feel that careful planning and experience will reduce the cost per cubic yard of material placed by the new technique future projects to a small fraction of the cost of that placed by other known techniques.

Mr. Chairman, once again I wish to thank you and the members of the Subcommittee for the opportunity to describe the technology of mine back-filling and the environmental benefits we hope to gain from the processes.

Senator HANSEN. We are on a tight schedule, but I understand, Mr. McGlothlin, the president of the Tri-County Independent Coal Operators, does have an early plane to catch. With the understanding of those others of the witnesses listed for this afternoon and if they would be agreeable, I would like to call on Mr. McGlothlin at this time to submit his statement. May I say for all of the witnesses here, we would like to hear from each of you. If you do have a prepared statement it will be included in the record in full as though it were read and in that manner each member of the subcommittee and the full committee will have an opportunity to go precisely into detail over what each of you have said. If you want to summarize the statement we would be happy to have you do that.

STATEMENT OF JAMES W. MCGLOTHLIN, PRESIDENT OF THE TRI-COUNTY INDEPENDENT COAL OPERATORS

Mr. MCGLOTHLIN. Thank you, Senator Hansen, I certainly appreciate the opportunity to speak here today.

I am James W. McGlothlin of Grundy, Va., president of the Tri-County Independent Coal Operator's Association, Inc., a group of small coal operators located in the southwestern part of Virginia. TRICOA is also a chapter of the National Independent Coal Operator's Association, Inc., and I am a coal operator in southwestern Virginia.

I believe it would be in order at this time to give some historical background as to why my association is interested in surface mining. Originally our membership participated only in underground mining; however, after the enactment of the 1969 Coal Mine Health and Safety Act we small operators became so ensnared in bureaucratic red tape and paperwork brought about by the act that we were not able to produce enough coal to fulfill our contracts to utility companies and other consumers. This is certainly not to say that increased health and safety was not needed, or desirable in the mines of this Nation. However, the small operators generally could not cope with the boggle of guidelines, rules, regulations, and mountains of forms required to be filled out by the Government; so it was necessary

for us to turn to surface mining to fulfill our commitments to our customers and most especially to the utility companies of our Nation who depend on coal for a source of electrical energy.

The importance of surface mining in producing coal can be explicitly demonstrated by the rise in surface mine production prior to 1969 which accounted for only about 30 percent of our coal production in this Nation, compared to this year where surface mining will account for upwards of 50 percent of this Nation's coal.

Surface mining produces approximately 83 percent of all of the minerals produced in this country and, of course, the importance of the retention of our ability to produce minerals has been attested to by the passage by Congress of the National Mining and Mineral Policy Act of 1970. This act required the Government to promote developments of all minerals through surface and underground mining methods.

In view of the importance of this type of mining to this country, the question develops as to how we can continue to develop and produce our mineral resources while yet protecting our environment as much as possible.

Certainly I believe in the required reclamation of land that has been disturbed by surface mining. I feel that we, as operators, have a great responsibility to ourselves and future generations to protect our surroundings from destruction as much as possible.

It is my belief that we can accomplish this goal best by requiring each State to enact reclamation and restoration acts covering all phases of surface mining and requiring each State to enact this legislation in a manner that will cause adequate reclamation in their State.

There are several very good reasons why I feel this should be left up to each State rather than enforced by Federal guidelines which may attempt to uniformly set forth the requirements for reclamation for the entire country. In developing this reason I should like the pleasure of using the State of Virginia's Reclamation Act and its ensuing enforcement as an illustration of how responsible State legislation can work.

It seems almost impossible to expect one Federal administrator to draw rules, regulations or guidelines that could encompass all of the problems that surface mining causes in each State, yet leave enough latitude to promote the development of all minerals in this country which are so important to our Nation. The problems and solutions in surface mine reclamation are vastly different in Wyoming and Virginia and it would be almost humanly impossible to write a law or regulation uniformly covering these problems, since they are so diverse through geological, climatic and strata circumstances.

Yet, if this problem is left up to each State, they can recognize their own individual problems as Virginia did in passage of its 1969 Mined Land Reclamation Act. Virginia realized that we were destroying our land without reclaiming it properly and an entire system was set up to administer a Virginia program which required proper reclamation, bonding to insure the reclamation, and a permit system for each and every operation in the State. Virginia set up an adequate inspection force to insure the reclamation of all land on which surface mining has occurred. Virginia's act has worked extremely well.

We have a highly trained and efficient team of inspectors to administer the act.

Our land, that has enjoyed surface mining and proper reclamation during the last 4 years, is now being used for churches, housing subdivisions, bowling alleys, and airports. The value of the land in our Appalachian mountainous area increases tremendously after surface mining and proper reclamation occurs, since level land is at a premium in our area and no further land becomes available unless surface mining occurs to level the land, thereby giving an increased amount of useful land to the general public. It would have been financially impossible to have built these airports and other projects, except for the fact that surface mining did provide the level land for use for these public projects.

Certainly it would be a shame to cause a good and efficient program, such as Virginia's, to be destroyed or changed when it is working so well because of some type of centralized or uniform legislation from our Federal Government. The Federal Government already has adequate legislation to cover surface mining as it affects the general Nation through our clean air and clean water programs by legislation previously enacted by Congress. I believe each State should correct their cosmetic difficulties as they see fit and in a manner properly designed to meet each State's individual problems as they arise.

Our Commissioner of Mined Land Reclamation has the authority, under our law, to correct whatever problems are found with surface mining, and all operators in Virginia are now required to regrade the land after mining, build silt dams, proper drainage facilities, plant grass over all of the area, plant 1,000 locust trees on each acre that is disturbed, and finally, plant a row of white pine trees around the outer edge of the entire strip bank.

I do not believe the Federal Government can organize, operate, and administer a program such as Virginia's in the entire Nation without creating a gigantic problem.

These problems may create a lack of reclamation and I am afraid the additional paperwork, bureaucratic redtape and other problems created by a large Federal program would force small operators out of business without achieving success such as Virginia's in the reclamation of land. Here I would like to interject that Senator Baker today wanted to pass or wanted to enact an immediate program that would give full control to the Federal Government during an interim period until the States could assume this obligation. The problem with that would be that it would destroy the program of a State like Virginia if they just had to close up shop. Some States do have an efficient program. I realize some States have no program at all, but ours is working very well.

I notice in some of the bills that Federal permits and Federal bonds are required of operators prior to surface mining. This is fine on a State level and Virginia already has such a system. However, if it were on a Federal basis it would surely cause great hardship on many small operators. Some bonds were suggested at \$500 to \$1,000 per acre. Virginia has \$100 per acre and has had only three or four bond forfeitures in the entire 4 years of operation, so certainly no higher bond is needed in our State. In addition, a higher bond would be easy for a large company such as Consolidation Coal Co. or Island Creek Coal Co.

to acquire since they could probably get a bonding company to bond them. However, small companies such as the ones in our association, who usually must use cash bonds, would be just out of business for a lack of bond in the amounts suggested.

The Nation needs the minerals mined by surface mining, the jobs this industry provides and it also needs proper reclamation on the areas after surface mining has occurred. I believe the best method to achieve this result is to require such State to enact legislation requiring reclamation and proper enforcement of this type legislation. I hope Congress will leave the particulars of the legislation and its enforcement up to each State in the hope that they will develop a successful program such as the State of Virginia's.

Thank you.

Senator HANSEN. Thank you very much, Mr. McGlothlin, for your statement.

Obviously you speak from experience and I know the committee will be very pleased to have your testimony.

Mr. MCGLOTHLIN. I wonder if I might leave with the committee a copy of the resolution from the Buchanan County Chamber of Commerce. In it they allow the States to control their own problems and they express the conviction that Virginia is doing a good job with their problems and they have about 258 members in the heart of the strip area of Virginia.

Senator HANSEN. You may indeed, and it will be made a part of the record.

Mr. MCGLOTHLIN. Thank you.

(The document referred to follows:)

RESOLUTION—BUCHANAN COUNTY CHAMBER OF COMMERCE

Whereas, it has been brought to the attention of this Chamber of Commerce that the United States Congress is presently considering a Bill concerning surface mining requiring certain control and regulations by the Federal Government over industry; and,

Whereas, Buchanan County, Virginia, has several small surface mine operators which add considerable importance to our economy; and,

Whereas, our County had approximately seven hundred (700) small underground coal operators prior to the 1969 Federal Coal Mine Health and Safety Act, and,

Whereas, Buchanan County, Virginia, has lost over three hundred (300) of these operators as a result of the strenuous requirements contained in the aforementioned Act, and,

Whereas, the Buchanan County Chamber of Commerce feels that the State of Virginia has an excellent program of reclamation of surface mining and that the State of Virginia is adequately covering this problem; and,

Whereas, this Chamber does not feel it necessary for the Federal Government to enact any legislature that might further destroy operations such as the surface mines in our County, and that adequate controls are already being exercised by the State of Virginia; and,

Whereas, to effect the wishes of this Chamber, an unanimous resolution was adopted on September 16, 1971, at a regular meeting of the Chamber: Now, therefore, be it

Resolved by the Buchanan County Chamber of Commerce, That the United States Congress be advised that it is the opinion of said Chamber that the present surface mining laws of the State of Virginia are adequate and that reclamation in our State is adequate and covers the problems created by surface mining; and be it further

Resolved, That the Buchanan County Chamber of Commerce feels that any Federal act regarding Federal permits, Federal bonds or Federal guide lines

on surface mining would of necessity destroy several of the small operators in our County thereby detracting from our economy and in most cases destroying the good reclamation that the State of Virginia now requires; and be it further

Resolved, That a list of the names of this Chamber be affixed hereto.

Dated this 16th day of September 1971.

BUCHANAN COUNTY CHAMBER OF COMMERCE.

Senator HANSEN. Next, may we hear from Mr. David Unger. Mr. Unger is assistant secretary of the National Association of Conservation Districts.

STATEMENT OF DAVID G. UNGER, ASSISTANT EXECUTIVE SECRETARY OF THE NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS

Mr. UNGER. Thank you, Mr. Chairman.

Senator HANSEN. I might note parenthetically, I used to serve on the Soil Conservation District in western Wyoming, and I know a little about the organization you represent.

Mr. UNGER. We are delighted to have a former association member with us.

I am David G. Unger, assistant executive secretary of the National Association of Conservation Districts (NACD). NACD represents over 3,000 individual conservation districts, which are independent subdivisions of State government, and their associations in the 50 States, Puerto Rico and the Virgin Islands.

We are vitally interested in the subject of surface mining control and reclamation. Virtually all of the privately owned land in the United States lies within the boundaries of conservation districts. Under the provisions of State law, our districts are charged with preventing and controlling erosion and sedimentation. Any activity affecting soil, water, and related resources is of vital concern to the more than 18,000 men and women who serve as district officials.

Wherever surface mining takes place in the United States, soil and water conservation districts are frequently consulted for guidance in preventing erosion damages and renovating mined sites. In many States, they are actively engaged in special programs under various administrative arrangements to reduce damage which results from inadequate restoration of mined sites. With assistance from the Soil Conservation Service of the United States Department of Agriculture and other agencies, approximately 500 of our districts in 31 States have provided services to over 5,000 landowners in reclaiming and improving mined areas.

We have reviewed the several bills under consideration by this subcommittee. We find some very good features in several of them. We do not find any one of them, however, that, in our opinion, adequately deals with all impacts of surface mining. Without calling attention to what we consider the strengths and weaknesses of the various bills, we should like to speak instead to the principles on which a sound, practical and economical program to deal with this problem can be based.

One, it is essential that a comprehensive national program deal not only with the prevention of future damages through the establishment of standards for reclamation and enforcement of those standards, but

also with the amelioration of damages that are presently occurring due to mining in the past. This will require technical and financial assistance.

We must, unquestionably, prevent problems that will result from unsupervised mining of new lands. But we must also rid the landscape of existing open sores that are now eroding, polluting our lakes and rivers, and contributing to flood hazards.

Two, standards for regulating future mining and reclaiming previously mined lands should be established by the States using criteria issued at the national level. This approach will place the mining industry on an equal footing in every State and will at the same time allow consideration of the differences in standards required by climate, topography and soils in different parts of the country. This principle has been put forth by several of the other witnesses today and I won't go into that any further.

Three, the program should apply to all lands affected by commercial mining of any kind. We do not believe that any particular branch of the industry should be singled out for attention.

Four, the problem must be attacked on both public and private lands affected by mining to date, about 90 percent are in private ownership. No program can be effective if both types of land are not treated. Principally it is a private land problem we are dealing with. Of the land affected by surface mining to date, over 90 percent is in private ownership.

Five, prevention of adverse effects of future mining and reclamation of previously mined lands should be based on plans developed on a drainage area basis. This is absolutely essential if the improvement of water quality is to be achieved.

Six, the Federal responsibility for dealing with the impacts of mining on the land surface should be exercised by the Department of Agriculture. USDA is the recognized authority in dealing with erosion, land reclamation, and land conservation. Working in cooperation with our conservation districts, the Department has built up a network of technical, financial, and educational arrangements which are already being utilized in mined-land reclamation and which would be available for an accelerated and expanded program.

Virtually all of the research being conducted in reclamation of mined lands is being done by USDA and cooperating agricultural experiments stations. The Department has 20 plant material centers where selection, evaluation, and development of suitable plants and cultural techniques for stabilizing critical sediment source areas, including lands affected by mining, is in progress.

The Soil Conservation Service of the Department of Agriculture has nearly 40 years of experience in the scientific planning of land reclamation and conservation work including the use of basic soils data and the utilization of engineering and vegetative measures for restoration, erosion prevention, and site development. SCS has available a corps of nearly 8,000 trained technicians across the country who are experienced in the application of technology to land problems of this kind.

We see no need to establish a new agency or office or to attempt to add technical and administrative competence to another depart-

ment when the needed capability already exists in the Department of Agriculture.

Seven, plans for erosion prevention and reclamation of past and future mined areas should be developed by qualified units of local government, such as soil and water conservation districts, in consultation with private industry and State and Federal agencies.

Conservation districts are qualified and experienced in preparing and carrying out scientific plans of this kind. They sponsor many regional conservation projects which involve operations and skills similar to those in mined land reclamation—including over 1,000 watershed protection projects and 70 Resource Conservation and Development Projects. They are accustomed to working with and coordinating a variety of organizations and agencies in programs sponsored at the local level with State and Federal assistance. They are responsible, under State law, for the conservation and development of land, water and related resources within their jurisdictions.

In each district, there is a resident staff or professional conservation technician from the Department of Agriculture and other Federal and State agencies providing services in accordance with memorandums of understanding. Included are soil scientists, soil conservationists, engineers, geologists, economists, biologists, foresters and agronomists. There are also personnel engaged in education and the financing of conservation projects. This vast array of talent, experience, and professional competence is at the disposal of districts and can be utilized in the reclamation of mined lands.

There is good precedent for utilizing conservation districts more effectively in surface-mining reclamation programs. For example:

In West Virginia, districts work under contract with surface mine operators to prepare revegetation plans for mined areas and to carry out the necessary work. Between 1954 and 1965, 1,887 plans were developed and 17,126 acres graded, planted, and seeded with district equipment.

A new law in South Dakota gives jurisdiction over all surface mining of coal, clay, stone, sand, gravel and other minerals to the State Conservation Commission, the agency which administers the conservation district law in that State. The Commission will issue mining permits and establish rules and regulations for reclamation, and districts will be involved closely in the program.

In Kansas, a new law establishes a Mined Land and Reclamation Board with membership from the State Soil Conservation Committee and from the ranks of conservation district cooperators. Districts are cooperating with the Rural Environmental Assistance program and the Ozark Regional Development Commission in reclamation demonstration projects and with the Extension Service in several other educational programs.

In Kentucky, all 37 conservation districts in the eastern coal fields have entered into a memorandum of understanding with the State Department of Natural Resources and the Soil Conservation Service. This establishes a program whereby the Department will require mine operators to secure a sediment control plan from the districts and install needed control measures and structures before a permit will be issued for surface mining.

Eight, we further recommend that the following considerations apply in any national reclamation program to be established:

A. That Federal assistance be provided only after determination that the Federal, State, or local governments do not intend to acquire the lands involved.

B. That long term—up to 10-year—agreements between the Secretary of Agriculture and landowners be used as the vehicle for providing for the orderly application of needed measures and practices. This has proven highly successful in the Great Plains Conservation program, and the procedure is being considered for application in several other programs.

C. That the share of Federal financial assistance in reclamation on private lands ordinarily not exceed 75 percent, but that higher rates not be precluded where critical public needs warrant it.

D. That public investments in this work be protected by State statutes or by agreements between landowners and the Secretary of Agriculture.

E. That the funds used for the program be new appropriations authorized for the purposes of the act.

Mr. Chairman, there can be no doubt that we will continue to need mineral and fuel resources for the welfare of man. The problem as we see it is how to meet these demands without adversely affecting other resources and degrading our environment. We believe the job can be done. We are conservationists, not preservationists. We cannot agree with those who would stop all surface mining. We believe our goal should be the blending of knowledge and trust between all segments of industry, government, and the various resource interests with the objective of meeting our needs for all resources.

It is our firm belief that legislation based on the principles I have outlined will be in that Nation's interest. Thank you for the opportunity to present our views on this important subject.

Senator HANSEN. Thank you, very much, Mr. Unger, for your very excellent statement.

Next we will hear from Mr. Sanford Darby, director of Georgia Surface Mined Land Use Board. Mr. Darby, I am glad to have you here.

STATEMENT OF SANFORD DARBY, DIRECTOR OF THE GEORGIA SURFACE MINED LAND USE BOARD

Mr. DARBY. Thank you, Senator. I do want to express my appreciation for being here.

Mr. Chairman, members of this distinguished subcommittee on mines and mining, I thank you for the opportunity of appearing before you for the purpose of expressing views dealing with the regulation of strip mining. I want to emphasize that my comments are not directed at any particular piece of proposed legislation. It is not my intent to be critical of any author's bill.

My objective is twofold. First, I want to share with you knowledge that I have gained during the past years in regard to mining and reclamation activities that are occurring in the State of Georgia on noncoal mined lands. I also want to use this opportunity to present

specific facts and recommendations for your consideration when final legislation is drafted dealing with the regulation of mining. Since August of 1968 I have been connected with reclamation. Our program went into effect on a statewide basis on January 1, 1969, yet this morning I hear proposed that we have Federal permits during the period of time that it takes the State to develop reclamations. I feel we have adequate regulations in Georgia that will probably meet your Federal guidelines that are to be derived and I am wondering now with a State with a valid program that is doing the job, that is not mining coal, what position is that going to put our program in?

Many Georgians have worked long and hard to develop an acceptable program in this field and we want to continue. We hope when legislation is drafted that you will help strengthen our State program. If anything, give us more enforcement tools to do a job that I think is a good job.

In your studies of strip mining and its effects on our environment, I am sure that you have accumulated a tremendous amount of information. I know that you have visited a variety of sites. I feel sure you are thoroughly familiar with strip mining for coal, as this is probably the largest single problem with which you must deal. What of the other forms of surface mining; that is, sand, gravel, crushed stone, iron, barite, kaolin, fuller's earth, brick clays, feldspar, mica, heavy minerals, fill dirt and topsoil, to mention a few. Have you carefully considered other forms of surface mining which yield products other than coal? It is true that the effects from noncoal mining may not be as large and as concentrated as lands affected by coal mining, but they drastically disturb the lands of our country and deserve careful consideration.

For the purpose of discussion, let us make several basic assumptions. It is my opinion that each of us will agree that America is the best country in the world, having approximately one-sixth of the world's population but consuming 40 percent of its natural resources. What has made America the giant that it is? What has given us our railroads, airplanes, ships, telephone lines, paved roads and many of the signs of economic development which we see daily? I am sure that you will agree with me that if it was not for mining and the basic products which this industry produces, we would not have a great nation. Our everyday lives are enriched and made more comfortable by the products which the mines of America produce. I feel that each of you will agree that if we didn't have mining and the basic products which this industry produces, we would not have a great nation. Our everyday lives are enriched and made more comfortable by the products which the mines of America produce.

I feel that each of you will agree that we must have mining and that this industry in itself is not the "bad boy" as pointed out by the "alarmist." In Georgia, we have definite proof that mining companies can harvest minerals and, at the same time, return affected lands to a state of productivity. In Georgia, we feel that one resource should never be used at the expense of another and that with simultaneous planning of mining and reclamation, this type work can be accomplished at a reasonable expenditure returning mined lands to usefulness and productivity.

Let us further assume that you will pass Federal legislation and that Federal laws to regulate strip mining are desirable. Here again, I feel you will agree that reasonable, and I stress reasonable, Federal laws can be the catalyst that will equate State programs. This one factor alone, the elimination of competitive disadvantages between similar mining industries that are situated in varying States, is adequate basis for Federal legislation.

Again, let us assume that the purpose of any law which you will enact that will regulate mining is to rehabilitate affectual lands.

If we agree on the fact that the products of mining are vital to our daily existence and that a Federal program is desirable and that the purpose of this program is to reclaim lands affected by mining, the question to be resolved is the way in which this will be carried out. The real problem that is to be solved is the manner in which reclamation is to be accomplished.

As director of the Georgia Surface Mined Land Use Board, I have had the privilege of writing rules which regulate surface mining in our State. Georgia is the largest State east of the Mississippi River, having 37 million acres of land. Its topography varies from the mountains to the ocean. It has numerous soil and vegetative types and, today, 23 commercial products are being surfaced mined.

The Georgia Surface Mining Act of 1968 is a brief act and delegated to our board the complete responsibility for the preparation of rules. How does one write a set of regulations that will apply to 23 different types of mining when topography varies from the mountains to the Atlantic Ocean? I can assure you this is not a simple task. It is rather difficult to develop a program that will apply to all type mining situations, a program that is reasonable and, at the same time, one that will accomplish the rehabilitation of mined lands without placing undue restrictions on mining operators. I know from experience in writing the Georgia rules and from administering and enforcing the provisions of this law many of the problems involved.

I can assure you that if you delegate complete responsibility to the Secretary of the Interior or to any one specific Government official the responsibility of developing regulations which will apply to the entire United States, he is going to have an almost impossible task to accomplish. Imagine the large number of varied type mining as well as the difference in topography, rainfall, climate, variation in vegetation and many other factors that would have to be considered when developing reclamation regulations for America.

In Georgia, the Surface Mined Land Use Board is composed of 11 members. They are empowered to make all rules that regulate surface mining. Members of our board are appointed by the Governor for 4-year terms from a list of names recommended to him by specific agencies or organizations. The membership of our board is composed of a wide range of experts dealing with forestry, soil and water conservation, game management, water quality control, mining and the Georgia Senate and House of Representatives. We have a highly technical, competent board who adopts rules as well as hears contested cases. This board has developed rules and regulations which we feel can do the job in Georgia.

The point I am attempting to make is that you would be wise to consider, when developing legislation to regulate mining, establishing

competent regional boards of this type and delegate to these boards the responsibility of developing reasonable rules for similar geographic areas. The various States of our Nation who now have active reclamation programs, as well as the various mining companies of our country, feel that boards of this type are highly desirable in that this is the American way to do business. If you vest in one government official the complete responsibility for regulating the mining industry and give to States or mining companies no recourse should grievances occur, this becomes a dictatorial manner of conducting business and is not the basis upon which our forefathers founded this country. In my opinion, you will be doing a tremendous service to whatever government official you may delegate the responsibilities for developing regulations if you make it mandatory that regional boards be established and give to them the responsibility for developing mining regulations in their regions and the task of reviewing contested cases.

In Georgia, we have gone a step further in an attempt to develop a sound program. We appointed a technical advisory committee consisting of a large number of experts from mining, the University of Georgia Institute of Natural Resources, School of Forest Resources, Agricultural Research Service, the Soil Conservation Service, and the Georgia Crushed Stone Association. Members are appointed for 2-year terms and assist the director with various technical problems. The result of the work of this committee are used as the basis for making recommendations to the official surface mined land use board. It is our intention to obtain as much sound technical guidance as is possible from a wide range of competent individuals. The success of our program to date is primarily due to the fact that we have had access to and used the knowledge of a large number of specialists as a basis for developing our program. It is my opinion that you would be wise to include a committee of this type in your proposed legislation.

Gentlemen, I am quite concerned when I read a proposed Federal act and it specifies that States will be given 2 years in which to enact their own legislation which meets Federal standards when the proposed Federal act fails to specify what minimum Federal standards the State must meet. If the power to develop regulations is vested in a specific government official, what assurance will a State ever have that their program will be acceptable no matter what its quality may be? I am of the opinion that in Georgia, today, we are effectively reclaiming mined lands and have been for the past several years. It is urgent that you recognize the geographic variations in mining and the differences in mining between different mineral resources when rules to regulate are developed.

As administrator of a State reclamation program, I became quite interested in what type committee will prepare a Federal law to regulate mining. I was surprised to learn that 77 percent of the membership of your committee lives in States west of the Mississippi River. A look at the Senate Interior and Insular Affairs Committee was even more shocking in that 100 percent of its membership is comprised of individuals who live west of the Mississippi River. It appears that unless the Members of Congress, who live in the Eastern United States and serve on these committees, are not unusually efficient that we easterners will be regulated by legislation which is developed by western-

ers. This, in itself, may not be detrimental to mining in the Eastern United States, as we realize each member of this committee is a most capable individual. The danger lies in that one is most likely to use the mining methods and techniques which occur in his area as a guideline when actually conditions in a particular Representative's home State may not apply to conditions in a State of another region. We respectfully request that the western Members of this committee give careful consideration to mining in the Eastern United States and develop legislation which will yield a program most advantageous to all concerned. I want to call your attention, sir, to a magazine article that appeared in the Atlanta Journal back in August and I am going to ask this be entered into the record. The article is on Georgia's reclamation program.

Senator HANSEN. That will be included by reference.

Mr. DARBY. In addition I want to submit this other item and I hope you can use these as guidelines in the difficult job you have to do in drafting the Federal legislation. In addition I would like to submit a copy of the Georgia law and rules and regulations of our board of what a mining operator must do in the State of Georgia to obtain a license and stay in business. I ask these be made a part of the record.

Senator HANSEN. These will all be included by reference.

Mr. DARBY. I would like to recommend that when final legislation is drafted, that you consider the whole problem of mining and not limit the legislation to strip mining. The act should be designed to require the repair of all environmental damage regardless of the type of mine or where it is located. Strip mining, surface mining, underground mines that have above ground spoil areas, dredging, highlands, wetlands, States, cities, municipalities, highway departments should all be included. This act should include all lands affected by mining and provide for adequate means of obtaining enforcement. When one grants special consideration to selected industries or fails to develop legislation that will adequately provide for the repair of environmental damage, the problem of the rehabilitation of mined lands is only partially solved.

I further recommend that you consider making the act of mining without a valid permit prima facie evidence of a violation of the act and save field inspectors the necessity of collecting evidence to prove surface mining when violations occur when it is obvious to everyone in the area that an operator is mining without a valid permit. For the proposed legislation to be meaningful the agency responsible for enforcing the act must be in position to issue cease-and-desist orders to bring mandamus actions and to bring injunctions when necessary to obtain compliance.

It is also recommended that consideration be given to assisting States financially during the duration of the program rather than for a rather limited period, for example, 3 years as proposed in some bills. I feel that if the U.S. Government and the various States of our Nation desire to regulate surface mining, financial assistance on a cost-sharing basis should be incorporated as a part of the program. A joint financed Federal and State program would be advantageous to both parties and the most economical way to fund a program of this type. I do not feel that industry should be burdened with large license fees.

I recommend that consideration be given to requiring companies to obtain permits rather than licenses and that no charge made to the company for obtaining the permit. Very small mining operators, the man with a front-end loader and one or two trucks, frequently experience difficulties in meeting competition and staying in business. An expensive license fee may be the difference between this type miner remaining in business and having the privilege of operating a small private business.

It is further recommended that Congress not delay the problem of reclaiming orphan lands; that is, lands mined prior to the enactment of reclamation laws. It is estimated that in Georgia we have approximately 40,000 acres of land on which no reclamation is occurring in that they were mined prior to the enactment of our reclamation law. Lands of this type will continue to be a source of siltation and sedimentation and adjacent lands and waters due to erosion in that they will not be reclaimed by their landowners. They bring in no annual revenue to landowners and produce low tax returns to counties. Daily, we see the effects of orphan lands. Frequently, we see a recently mined site being reclaimed adjacent to lands of this type and it is difficult to justify reclaiming a small portion of an area when it lies adjacent to other drastically disturbed previously mined lands. We urge that consideration be given to including in legislation dealing with reclamation a provision that will provide for the reclamation of previously mined lands on a cost-sharing basis. Funds for this type work are urgently needed. You have been told that the reclamation of lands of this type is a separate problem and will be handled at a later date in different legislation. I am of the opinion that one cannot separate the reclamation of currently mined lands and orphan lands. Before satisfactory reclamation will occur, that is, before environmental damage done by mining can be properly repaired one must consider the whole problem. In my opinion, piecemeal legislation will not get the job done.

I would like to refer you to a recent article which was contained in the Atlanta Journal and Constitution magazine, August 29, 1971—see pages 16 and 17—and that deals with the reclamation of mined lands in the State of Georgia. A copy of this publication was forwarded to each member of this committee. This article illustrates what can be accomplished in regard to the reclamation of lands affected by noncoal mining. I would like to emphasize that the mining operators of Georgia have cooperated with our board in a splendid manner. In fact, many are going beyond the legal requirements of our program. The surface mining operators of our State are to be commended for the fine competitive spirit which has developed between companies. We extend to you a personal invitation to visit our State and see what is occurring. We will be happy to arrange a field trip to fit your needs that will give an overall view of what can be accomplished by industry.

Our State program has minimized the use of police powers and emphasized mutual cooperation with industry. I recommend to you that any Federal program developed be patterned along this same line. The tools for legal enforcement are a must in the reclamation of mined lands, but they should be used only when other methods fail and are an absolute necessity.

In summary, we ask that you give consideration to developing a reasonable program that will provide for regional boards which are empowered to develop rules and hear grievances. We ask that the program be developed in such a manner that it will recognize geographic variations and differences between various parts of our Nation and one that will allow States and mining operators a method whereby they can participate in decisionmaking which will affect their operations. We request that consideration be given to including all forms of mining and affected lands—including orphan lands—in the legislation and that financial assistance distributed on a continuing, cost-sharing formula basis be made a part of the program.

It has been a pleasure and a privilege to share with you our experiences and thoughts dealing with the regulation of mining. We humbly ask that you lay aside any preconceived opinions which you may have developed on this subject or the opinions of any special interest group and do what is best for America.

In my opinion, it is now time in America for us to put aside our "frontier attitude"; an attitude that we can use a natural resource and move on as more is over the horizon. This is the attitude that developed our country, but these days are gone and it is now important that the mineral resources of our Nation, as well as lands affected by mining, be adequately protected.

Senator HANSEN. One question. Would bonding requirements assist in State reclamation?

Mr. DARBY. Definitely, sir. I don't think you could have effective programs without bonding requirements. Our bonding in Georgia is from \$1 to \$100 per acre and the average is \$400 an acre. But bonding is important and we have instances where without the bond we wouldn't obtain effective reclamation.

Senator HANSEN. I think you already answered my other question, what enforcement assistance can the Federal Government give the State other than financial?

Mr. DARBY. As far as enforcement is concerned, a State needs the right to bring injunctions. All types of actions are required. Maybe we might need the right for criminal penalties, the mining operator won't agree with me, but we also need the right to fine because we have had operators in Georgia that knew better that would have several permits that would open up a new area and not say anything until it was picked up by one of the field inspectors. When you are completely ignored I think you should have some recourse. I would like to say, sir, laws are only to be used against the nonconformist. He should be penalized that way.

Senator HANSEN. Thank you very much, Mr. Darby.

Mr. Irving Roberts, vice president for Corporate Planning, of Reynold Metals Co. Mr. Roberts, we are very pleased to have you here this afternoon.

STATEMENT OF IRVING ROBERTS, VICE PRESIDENT FOR CORPORATE PLANNING OF THE REYNOLDS METALS CO.

Mr. ROBERTS. Senator Hansen, my statement is a rather short one so I will just go ahead and read it.

Senator HANSEN. Fine.

Mr. ROBERTS. I am Irving Roberts, vice president for Corporate Planning of the Reynolds Metals Co., Richmond, Va., one of the Nation's aluminum producers. I appear before you today on behalf of my company to bring to your attention the situation of the aluminum industry as it may be affected by proposed legislation on strip mining.

Aluminum is an important material in our modern economy. According to a recent U.S. Department of Commerce report, our industry last year sold ingot and mill products with a total value of about \$5.3 billion. The industry produced these products in more than 800 plants that employ about 200,000 workers. In addition, the livelihoods of several million workers in thousands of metalworking plants depend on a continuous flow of aluminum for end products that are wholly or partially aluminum.

After steel, aluminum is the second most widely used metal. Automobiles use roughly 75 pounds of aluminum per car. New houses average more than 400 pounds of aluminum per house. Apartments require over 250 pounds per dwelling unit and each mobile home needs 600 to 800 pounds. Aluminum is an essential material of today's technologies, required for literally thousands of uses in transportation, housing, packaging, communications, industrial processes, and consumer durable goods.

The ore of aluminum is bauxite. Bauxite is a rock which is high in alumina—aluminum oxide—and low in silica and other impurities. Bauxite is a weathered rock, that is, almost all of it has been produced by the action of the weather over millions of years on surface igneous rocks which originally came from the interior of the earth. Among the intermediate products of such weathering are the clay minerals, which are varying combinations of alumina, silica, and water. In tropical climates, further weathering of the clay minerals tends to dissolve away the silica, leaving behind the alumina with impurities, in the form of bauxite. Thus, bauxite is found in tropical countries, or countries which have at one time been tropical in their geologic history. Much of Arkansas was at one time tropical, and practically all the limited bauxite reserves of the United States are found in that State.

Being a weathered rock, bauxite is always found near the surface and substantially all of it must be mined by strip mining techniques.

The primary aluminum capacity of the United States is currently about 4 million tons per year, and at the typical 4-to-1 ratio, the industry consumes about 16 million tons of bauxite annually. Of this, only about 10 percent is produced in Arkansas, with the other 90 percent coming from foreign sources, either in the form of bauxite or as purified alumina made from bauxite.

Because of this heavy dependence upon foreign sources, with its implications for national security and the balance of payments, the Federal Government has been studying the development of processes to utilize other domestic raw materials as sources of aluminum. A recent report of the National Materials Advisory Board recommends that the U.S. Bureau of Mines, with the cooperation of the domestic aluminum producers, build and operate two major pilot plants for such processes. Among the potentially economic raw materials are laterites found in Oregon and Washington, and kaolin clays found in Georgia and other States. Domestic reserves of such potential raw

materials are very large, but, here again, these are weathered rocks, close to the surface, and they will have to be removed by strip mining.

Apparently, the aluminum industry cannot escape its dependence upon surface mining for its basic raw materials, either present or potential.

There is another area in which the aluminum industry depends strongly on surface mining. The aluminum industry is a heavy consumer of power, and low power costs depend, in part, on the ability of our utility suppliers to obtain low-cost strip coal.

The availability of low-cost power is particularly important to our industry today because of the severe competitive situation we face in world markets. The aluminum industry is still a growth industry, both domestically and abroad, but very little expansion of primary capacity is planned for the United States. Substantially, any new expansion of capacity is taking place overseas. One major reason for this is the recent rapid escalation of investment costs of plants in the United States, not only because of the present-day need to invest in plant automation and in equipment to control pollution. Another reason is the continuing disparity in labor rates between us and our foreign competitors, giving them a very substantial operating cost advantage.

Many foreign governments are anxious to promote the growth of a local aluminum industry. They offer their local producers investment and tax incentives, and the inducement of long-term contracts for low-cost power. By contrast, power rates to the aluminum industry of the United States have recently been rising sharply. The largest single increase, about 30 percent, was instituted last year by TVA. A ban on the strip mining of coal would cause a further increase in power costs, and would be a serious blow to our industry.

My own company has, over the past two decades, been acquiring substantial reserves of coal in the ground to be used in the future to generate low-cost power. Much of this coal is low in sulfur, which would minimize the pollution problems of powerplants. But most of this coal is near the surface, and we would not be able to mine it if surface mining were forbidden.

We realize that, in the past, some companies have failed to restore the surface of mined-out areas, but there are also companies which have not only restored the ground, but even improved it by providing such developments as parks, recreational areas, wildlife sanctuaries, and farmlands. The policy of the Reynolds Metals Co. is that of reclamation and improvement, and we intend to continue that policy whatever we mine, be it bauxite, coal, or clay.

Thank you, Mr. Chairman.

Senator HANSEN. Thank you for a very excellent statement, Mr. Roberts. I saw just recently a picture in a magazine that displayed for the first time, to my knowledge, an aluminum stud which was used in constructing of an individual dwelling. I gather that your industry can prosper, and perhaps there will be less need to cut as extensively as we have on our national forests in order to provide studs. I was not aware of this.

Mr. ROBERTS. This is one area in which aluminum is just beginning to be used, that in residential construction. We feel there are many new applications for aluminum yet to be in commercial use. These figures that I have given here as to the use of aluminum per house will be increased manifold in the next few decades.

Senator HANSEN. What about recycling of metals? I happen to use a paper for my news releases, which has been recycled. At the present time, it is not cheaper than the regular paper, but I use it because it would seem to me if we could encourage others to use it, I am told, the per unit cost of recycling would go down, and it could not only save a lot of our trees, but it would make possible cheaper material than that which we now have the option of using. What about the aluminum industry; can those metals be recycled easily and economically?

Mr. ROBERTS. Yes. Fortunately, aluminum has substantial scrap value, and our company, in particular, has been taking the lead in recycling aluminum cans which are used for beer and soft drinks. We have set up hundreds of reclamation centers throughout the United States, where such cans are redeemed at a price of about 10 cents per pound. This provides sufficient incentive so that we have been experiencing a remarkable growth in the rate in which these cans are brought to us.

Now a good part of our growth is from the reclaimed metal as well as the primary metal.

Senator HANSEN. Very interesting, I would like to observe, as we are well aware of your presence in our State. We commend you for the methodical scientific manner in which you have gone about exploring your reserves out there. Primarily, those coalbeds we have in such abundance, and we think you are undertaking the kind of program that could make possible the utilization of these important sorts of energy with a minimum amount of disturbance to the countryside. You happen to be in one of the beautiful sections of Wyoming, and we are going to count on you to do the kind of job that makes us all proud.

Mr. ROBERTS. Thank you, sir. We are working very hard on the development of these sources. We still have problems facing us with regard to the development, but we hope to have these worked out in a fairly short time. Unfortunately, our aluminum industry is in a state of overcapacity at the present time, so that we cannot look forward to the early erection of an aluminum plant at that location—or any location, for that matter. But we have other plans which I hope will mature in the next few years.

Senator HANSEN. Just one further question. I suspect that the major nations are equally as much concerned as any other highly industrialized nation with pollution and common commitments, to do everything they can to minimize and abate this very significant and vexatious problem. Do you have any feeling about what the policy of our Government should be in taking steps that would afford some measure of protection to American-based industries and would protect the jobs of those persons employed here in this country by industry so as not to permit the loss of this type of business in this country and the loss of American jobs that could follow?

Do you have any thought about the competition that exists?

Mr. ROBERTS. Yes; we are facing severe competition from countries like Japan, Germany, Norway—nations which either subsidize heavily their domestic aluminum industry or provide them with power at very low cost. With this intrinsic advantage of low labor rates, we find it all the more difficult when we find these restrictions imposed upon us. We are in favor of pollution control and regulation by the Government, but we believe it should be reasonable, and it should be

done with an eye toward not killing the good, in this case the aluminum industry. We believe we have an industry which is as technically modern and viable as any in the world; and with reasonable regulations, we feel industry can continue to grow. The alternative would be that the use of aluminum would continue to grow in this country, but the aluminum could come from our competitors overseas.

Senator HANSEN. Thank you.

There is a vote; I will recess these hearings for whatever time it takes me to go over to vote and get back here. I would hope I might be back by 3:15 p.m. Let us assume that I will be, and the hearings will stand in recess until 3:15 p.m.

[Recess.]

Senator HANSEN. Mr. Wright, are you ready to proceed?

STATEMENT OF A. T. WRIGHT, STAFF CONSULTANT, WILDERNESS SOCIETY

Mr. WRIGHT. Yes.

Senator HANSEN. All right, we are glad to have you here and glad to hear your testimony.

Mr. WRIGHT. Thank you, sir.

Mr. Chairman, my name is Arthur T. Wright, staff consultant to the Wilderness Society of 729 15th Street, NW., Washington, D.C., a national nonprofit conservation organization of approximately 70,000 members. We have long worked with the Congress, the Federal agencies and the public in protecting and preserving those remnants of wilderness which yet remain in national forests, parks, and wildlife refuges. We also have deep concerns with respect to the environmental and ecological degradation of the kind caused by the strip mining of coal. We also wish to express our dismay over the blighted lives of Americans whose homes and property have been damaged by strip mining at the hands of ruthless owners of mineral rights bent on private profit at the expense of human rights and other public values inherent in the land.

One of the bills here under consideration, specifically S. 1498, while its primary thrust pertains to the elimination of strip mining, would also prohibit underground coal mining in wilderness areas established by act of Congress under the Wilderness Act of 1964. We feel very strongly, of course, that the protection proposed by S. 1498 against the deep mining of coal in a wilderness area is crucially important to the security of any wilderness area caught in such a predicament. The National Wilderness Preservation System as created by the Congress for the American people is greatly deserving of this protection.

S. 1498 would also result in strict regulation of deep mining in any national forest affected by such a threat. The Monongahela National Forest in West Virginia is an example. This, I am sure Senator Randolph knows about. The mineral rights in this forest are largely privately owned. One such owner planned to open deep mines in the 18,000 acre Otter Creek drainage, said by many to be one of the choicest wild areas in eastern United States, and, in view of many conservationists, a prime candidate for wilderness status. This threat was stopped by a temporary court injunction but who knows what the future holds for Otter Creek and the irreplaceable public values which exist in its unspoiled and undeveloped condition.

Still another owner plans to open deep mines along the Middle Fork of the Williams River in the Cranberry Back Country of the Monongahela National Forest. At a lovely, natural area called Three Forks of the Williams River, the Forest Service, at one time, planned a public campground. Such plans in behalf of the public were called off because of the plans of the owners of the mineral rights for a coal tippie complex on the same site.

We have here a situation wherein the two best areas in the Monongahela National Forest are threatened with deep mining. Quoting from the U.S. Forest Service Guide, it is stated that it is estimated that mineral rights are owned by others on 60 percent of the national forest lands in the region. Within my knowledge Monongahela Forest has a severe problem.

We submit that all of these goals—the termination of strip mining and protection for national forests and wilderness areas—must be achieved if we are to retain environmental and ecological health for existing and future generations of Americans.

Moreover, we doubt that there is an energy crisis of serious enough proportions which demands that coal be strip mined at its present rate or, indeed, that it be strip mined at all. The experts tell us that we have adequate coal reserves for the indefinite future. We are not forced to resort to stripping. Why, then, must coal be stripped at all in view of the staggering social and environmental costs which attend it? These are public costs which are in no way reflected in the market price of strip mined coal. The coal operator and the consumer are the sole beneficiaries of this allegedly cheap coal. Deep mining on an almost exclusive basis seems to be the only sane answer to the catastrophic alternative of strip mining. Strippable coal ought to be held in reserve against the day when generations of Americans yet unborn might really need it. We do not.

The land which would otherwise be stripped of its top soil, its trees, grass and flowers, its wildlife and its good water will remain to enrich the lives of all Americans and especially those who reside in areas otherwise subject to the devastation of strip mining. The Congress has an opportunity before it to create the economic conditions which will quickly diminish and eventually eliminate strip mining and put deep mining in the forefront to stay.

The energy people have been telling the American people for quite some time that there is an energy crisis which must be met. Aside from the fact that the crisis, if indeed there is one, has been induced by high pressure sales tactics and overpromotion, a part of the picture has to be the 52 million tons of coal exported annually. This has a familiar ring. It smacks of the same deception practiced by the lumber industry in its attempted raid of recent years on the national forests. They cried for lumber from the national forests to meet the housing shortage when they were exporting 3 billion board feet annually, mostly to Japan. When one looks at oil, particularly Alaskan oil, stripped coal and at lumber, one finds it hard to believe that we are anywhere close to a land ethic of worthy proportions. This committee can help correct that deficiency by approving a bill which will prohibit strip mining. S. 1498 is such a bill.

While we favor an outright ban on strip mining, we could accept a situation wherein a ban is established but permits exceptions

provided the stripper satisfactorily demonstrates that the area can be permanently reclaimed. Although we doubt it, there just might be a few such areas.

This brings us to our concern about the efficacy of the reclamation of strip and mined land upon which great reliance will be placed by many. We have no doubt that some interests will be able to unveil some showcase areas where it is alleged that successful reclamation has been achieved.

There are those who will make this claim if any type of vegetative cover—grass, shrubs or trees—can be established, even temporarily. But let's examine it more closely to see if it is real. Let us note in such reclaimed situations the absence of litter, such as is built up on an undisturbed forest floor. Without litter, which takes many years to accumulate, and despite the grass, shrubs or trees standing on alleged reclaimed land, sheet erosion takes place on the now loose and very shallow soil of a stripped area. Sheet erosion is the uniform removal of soil in thin layers by the action of wind and water. It is hard to detect visually but it does occur on disturbed land—even plowed farm land is subject to sheet erosion much less the grossly disturbed and thinned out scattered soil of a strip mined area.

Sheet erosion is distinguished from the more extreme forms of rill and gully erosion and these often have their beginnings in sheet erosion. We are led to the conclusion that, in a stripped land situation, where vegetative cover appears to have taken hold, erosion will nonetheless continue. This sheet erosion, in turn, will prohibit or drastically slow down the formation of the crucial layer of litter so important to the life of the vegetative cover. Hence, it seems certain that the vegetative cover will lead a risky life, and possibly die. To maintain it and protect it to the point of developing the litter will obviously be prohibitively expensive.

A related question involves the claim of some that a climax forest or climax ecology can be reestablished with the passage of time—for example—the planting of black locust seedlings, generally regarded as a pioneer species in plant succession, is alleged to lead to the attainment of a climax condition. I think it is fair to say that the U.S. Forest Service would have difficulty with that approach. Referring to the 1949 Yearbook of Agriculture entitled "Trees", an article therein—page 114—entitled "Forests and Soils" contains the following:

Successful reforestation, particularly with the hardwoods, has to take into consideration selection of the proper species and the balance between trees and soil. Perhaps the soil has eroded or all trees have been removed from it: Then it is not simple to choose trees that grow well on bare land; also, the balance that existed in the virgin forests was destroyed when the land was cleared. Basic soil and atmospheric changes often make such areas incapable of supporting the original species.

It is clear from this that reclamation is at best a myth and at worst a hoax if we delude ourselves into believing that we can reestablish anything but a shaky monoculture on strip mined areas.

This same article also attaches extreme importance to litter, the formation of which is drastically impeded by sheet erosion as stated above. On page 117 of the yearbook it is stated that:

Forests affect the soil most of all through litter. Litter breaks the impact of rain, retards runoffs, and filters rain water into the soil without disturbing soil

structure. In dry weather, litter reduces surface evaporation. When litter decays, it provides mineral elements for tree growth. It shelters microbiotic life, and it shelters worms that help to keep the soil granular and mellow. In extremely cold weather, the forest litter acts as a blanket through which the heat from the soil cannot escape rapidly. Litter therefore reduces the depth of freezing of forest soils. When a forest soil does freeze, it tends to honeycomb and is therefore permeable to sudden rains that may come in late spring.

Litter is the source of the humus horizon of a forest soil, and the humus layer is the part of a forest soil that distinguishes it from an agricultural soil.

The importance of litter is also enhanced by the information contained in a brief article in the April 1970 issue of the Soil Conservation Services publication "Soil Conservation." On page 213 in an article entitled "Earthworms Studied for Use in Strip-Mine Reclamation," it is stated that:

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It seems to me that we are already beginning to scrape the bottom of the barrel in our efforts to avoid the environmental and ecological disaster resulting from strip mining. It is no time to be facetious, I presume, but maybe all of us in this room ought to go into the earthworm production business. I can see the American taxpayer purchasing trillions upon trillions of earthworms in future years and decades in a desperate effort to heal the land so wantonly destroyed by strip miners.

We urge the committee to examine very closely the claims of those who attempt to demonstrate the successful reclamation of stripped land. There may be a number of show places which look pretty good but we have well over 2,000 square miles to reclaim right now and much, much more to go before coal stripping is curtailed or eliminated. Let's not fall into the trap of regarding the establishment of any type of vegetative cover as successful reclamation. It seems clear that most of this tremendous acreage can never be restored to a useful condition but, instead, will contribute to the siltation of streams for many, many years to come and otherwise fail to achieve permanent growth without successive and expensive efforts to aid the process. It seems certain that the reclamation of stripped land will never be a one-shot deal; that it will, instead, be an endless burden to the American people and a virtually permanent eyesore.

In full recognition of the fact that a ban on stripping poses economic and coal production problems affecting our energy requirements, we nonetheless urge the committee to approve S. 1498. We may be heading toward an energy crisis but, most assuredly, we already have an environmental and ecological crisis which could become almost insurmountable if strip mining is not eliminated or drastically curtailed.

Thank you for the opportunity to make this statement.

If I may, in addition to my prepared statement, I would like to respond to your reasonable concern about the possible elimination of the Department of the Interior in favor of EPA in the regulation of strip mining.

I believe other members of the committee may have similar concerns. It is my understanding that EPA was created by Executive order to specifically place under one administration those regulatory responsibilities effecting environmental quality which previously had been scattered among many agencies, especially, I believe, circumstances where environmental administration has had to compete for attention in agencies whose major duty mainly developed to be that of developing the industries. The environment also takes a back seat in such circumstances. I think the hearing record will demonstrate the same point. I think Government agencies generally agree that EPA was necessary in this regard even though Mr. Dole seems to be taking a different stance at this time.

He said it all when he said Interior is a resource agency. Any way you read it that means development. With environment and pollution coming into play only to the extent that development does not impede it.

I might add in that regard, that the statement that Mr. Roberts, I believe, from Reynolds Metals, just made a few minutes ago, wherein he suggested that the Bureau of Mines aid in the development of the aluminum industry to the extent it has to improve its technology, I think was a reference to a couple of new plants that need development to do certain things with respect to United States supplies of aluminum. He very clearly and very distinctly said that the Bureau of Mines ought to do that. I call that development, promotion and assistance to industry and in most circumstances I fail to see, and this, of course, pertains to coal, in these circumstances I fail to see how the Bureau of Mines could do an adequate job with respect to the environment.

Senator HANSEN. I appreciate very much having your statement, Mr. Wright. I might add parenthetically that coming from my part of the West, I had the privilege of knowing Mr. Murray, whose wife, Mary, continues in carrying forth the banner of the conservationists. I have known them intimately and well for many years, and I share most American's delight and pleasure with these crusading dedicated people.

I appreciate what you say and we are glad to have your expressions of opinion, which I suspect, reflects the consensus that is a fair statement, of at least many members in the Wilderness Society.

Mr. WRIGHT. Thank you very much.

Senator HANSEN. I know the members of the committee will enjoy reading in full what you have summarized for us today. Thank you for your appearance.

(Mr. Wright's prepared statement follows:)

STATEMENT OF A. T. WRIGHT, STAFF CONSULTANT, THE WILDERNESS SOCIETY, WASHINGTON, D.C.

Mr. Chairman and members of the committee, my name is Arthur T. Wright, Staff Consultant to the Wilderness Society of 729 15th Street NW., Washington, D.C., a national nonprofit conservation organization of approximately 70,000 members. We have long worked with the Congress, the federal agencies and the

public in protecting and preserving those remnants of wilderness which yet remain in national forests, parks and wildlife refuges. We also have deep concerns with respect to the environmental and ecological degradation of the kind caused by the strip mining of coal. We also wish to express our dismay over the blighted lives of Americans whose homes and property have been damaged by strip mining at the hands of ruthless owners of mineral rights bent on private profit at the expense of human rights and other public values inherent in the land.

One of the bills here under consideration, specifically S. 1498, while its primary thrust pertains to the elimination of strip mining, would also prohibit underground coal mining in wilderness areas established by act of Congress under the Wilderness Act of 1964. We feel very strongly, of course, that the protection proposed by S. 1498 against the deep mining of coal in a wilderness area is crucially important to the security of any wilderness area caught in such a predicament. The National Wilderness Preservation System as created by the Congress for the American people is greatly deserving of this protection.

S. 1498 would also result in strict regulation of deep mining in any national forest effected by such a threat. The Monongahela National Forest in West Virginia is an example. The mineral rights in this forest are largely privately owned. One such owner planned to open deep mines in the 18,000 acre Otter Creek drainage, said by many to be one of the choicest wild areas in eastern U.S. and, in the view of many conservationists, a prime candidate for wilderness status. This threat was stopped by a temporary court injunction but who knows what the future holds for Otter Creek and the irreplaceable public values which exist in its unspoiled and undeveloped condition. Still another owner plans to open deep mines along the Middle Fork of the Williams River in the Cranberry Back Country of the Monongahela National Forest. At a lovely, natural area called Three Forks of the Williams River, the Forest Service, at one time, planned a public campground. Such plans in behalf of the public were called off because of the plans of the owners of the mineral rights for a coal tippie complex on the same site. We have here a situation wherein the two best areas in the Monongahela National Forest are threatened with deep mining.

We submit that all of these goals—the termination of strip mining and protection for national forests and wilderness areas—must be achieved if we are to retain environmental and ecological health for existing and future generations of Americans.

Moreover, we doubt that there is an energy crisis of serious enough proportions which demands that coal be strip mined at its present rate or, indeed, that it be strip mined at all. The experts tell us that we have adequate coal reserves for the indefinite future. We are not forced to resort to stripping. Why, then, must coal be stripped at all in view of the staggering social and environmental costs which attend it? These are public costs which are in no way reflected in the market price of strip mined coal. The coal operator and the consumer are the sole beneficiaries of this allegedly cheap coal. Deep mining on an almost exclusive basis seems to be the only sane answer to the catastrophic alternative of strip mining. Strippable coal ought to be held in reserve against the day when generations of Americans yet unborn might really need it. We do not! The land which would otherwise be stripped of its top soil, its trees, grass and flowers, its wildlife and its good water will remain to enrich the lives of all Americans and especially those who reside in areas otherwise subject to the devastation of strip mining. The Congress has an opportunity before it to create the economic conditions which will quickly diminish and eventually eliminate strip mining and put deep mining in the forefront to stay.

The energy people have been telling the American people for quite some time that there is an energy crisis which must be met. Aside from the fact that the crisis, if indeed there is one, has been induced by high pressure sales tactics and overpromotion, a part of the picture has to be the 52 million tons of coal exported annually. This has a familiar ring. It smacks of the same deception practiced by the lumber industry in its attempted raid of recent years on the national forests. They cried for lumber from the national forests to meet the housing shortage when they were exporting 3 billion board feet annually, mostly to Japan. When one looks at oil, particularly Alaskan oil, stripped coal and at lumber, one finds it hard to believe that we are anywhere close to a land ethic of worthy proportions. This Committee can help correct that deficiency by approving a bill which will prohibit strip mining. S. 1498 is such a bill.

While we favor an outright ban on strip mining, we could accept a situation wherein a ban is established but permits exceptions provided the stripper satisfactorily demonstrates that the area can be permanently reclaimed. Although we doubt it, there just might be a few such areas.

This brings us to our concern about the efficacy of the reclamation of strip mined land upon which great reliance will be placed by many. We have no doubt that some interests will be able to unveil some show case areas where it is alleged that successful reclamation has been achieved.

There are those who will make this claim if any type of vegetative cover—grass, shrubs, or trees—can be established, even temporarily. But let's examine it more closely to see if it's real. Let us note in such reclaimed situations the absence of litter, such as is built up on an undisturbed forest floor. Without litter, which takes many years to accumulate, and despite the grass, shrubs or trees standing on allegedly reclaimed land, sheet erosion takes place on the now loose and very shallow soil of a stripped area. Sheet erosion is the uniform removal of soil in thin layers by the action of wind and water. It is hard to detect visually but it does occur on disturbed land—even plowed farm land is subject to sheet erosion much less the grossly disturbed and thinned out scattered soil of a strip mined area. Sheet erosion is distinguished from the more extreme forms of rill and gully erosion and these often have their beginnings in sheet erosion. We are led to the conclusion that, in a stripped land situation, where vegetative cover appears to have taken hold, erosion will nonetheless continue. This sheet erosion, in turn, will prohibit or drastically slow down the formation of the crucial layer of litter so important to the life of the vegetative cover. Hence, it seems certain that the vegetative cover will lead a risky life, and possibly die. To maintain it and protect it to the point of developing the litter will obviously be prohibitively expensive.

A related question involves the claim of some that a climax forest or climax ecology can be reestablished with the passage of time; for example, the planting of black locust seedlings, generally regarded as a pioneer species in plant succession, is alleged to lead to the attainment of a climax condition. I think it is fair to say that the U.S. Forest Service would have difficulty with that approach. Referring to the 1949 Yearbook of Agriculture entitled "Trees," an article therein (p. 114) entitled "Forests and Soils" contains the following:

"Successful reforestation, particularly with the hardwoods, has to take into consideration selection of the proper species and the balance between trees and soil. Perhaps the soil has eroded or all trees have been removed from it: Then it is not simple to choose trees that grow well on bare land; also, the balance that existed in the virgin forests was destroyed when the land was cleared. Basic soil and atmospheric changes often make such areas incapable of supporting the original species."

It is clear from this that reclamation is at best a myth and at worst a hoax if we delude ourselves into believing that we can reestablish anything but a shaky monoculture on strip mined areas.

This same article also attaches extreme importance to litter, the formation of which is drastically impeded by sheet erosion as stated above. On page 117 of the Yearbook, it is stated that:

"Forests affect the soil most of all through litter. Litter breaks the impact of rain, retards runoff, and filters rain water into the soil without disturbing soil structure. In dry weather, litter reduces surface evaporation. When litter decays, it provides mineral elements for tree growth. It shelters microbiotic life, which breaks down many kinds of complex substances into simple forms, and it shelters worms that help to keep the soil granular and mellow. In extremely cold weather, the forest litter acts as a blanket through which the heat from the soil cannot escape rapidly. Litter therefore reduces the depth of freezing of forest soils. When a forest soil does freeze, it tends to honeycomb and is therefore permeable to sudden rains that may come in late spring.

Litter is the source of the humus horizon of a forest soil, and the humus layer is the part of a forest soil that distinguishes it from an agricultural soil."

The importance of litter is also enhanced by the information contained in a brief article in the April 1970 issue of the Soil Conservation Service's publication, *Soil Conservation*. On page 213 in an article entitled "Earthworms Studied for Use in Strip-Mine Reclamation," it is stated that:

"Earthworm inoculation may some day be added to standard procedures for strip-mine reclamation already developed to cover spoil banks with new vegetation.

"Earthworm populations established on heaps of clay shale in northeast Ohio buried leaf litter beneath black locust trees during a 180-day experiment. Plant nutrient concentrations in the spoil banks increased significantly as earthworm activities hastened leaf decay and organic matter incorporation.

"Field results were confirmed by Dr. J. P. Vimmerstedt, a research forester who conducted simultaneous greenhouse studies of spoil material cores at the Ohio Agricultural Research and Development Center in Wooster, Ohio.

"In a paper presented at the 1969 joint meetings of the American Society of Agronomy, the Crop Science Society of America and the Soil Science Society of America, Vimmerstedt reported that earthworms confined to specific spoilbank areas for 2 years buried or consumed about 2.2 tons per acre of litter and 10 tons per acre of unmixed surface organic matter."

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Thank you for the opportunity to make this statement.

Senator HANSEN. Mrs. Charter and Mrs. Johnson, may we hear from you? Would you like to come together? For the record, Mrs. Boyd Charter and Mrs. Fred Johnson are from Billings, Mont. I might also observe that they are both active ranchers. I think it also could be said active cattle ranchers, among other things. Is that not right?

STATEMENT OF MRS. VERA-BETH JOHNSON, REPRESENTING THE BULL MOUNTAIN LANDOWNERS ASSOCIATION, ROUNDUP, MONT.

Mrs. JOHNSON. Yes.

Senator HANSEN. It might be helpful for the record for those who are not here at the moment, so that they would have a better understanding of your background, if you would care to tell us a little about that. Perhaps you would do that in your prepared statement. Which of you would like to be heard first?

Mrs. JOHNSON. I would like to be heard first, please.

My name is Vera-Beth Johnson, and I am a wife and the mother of two small children. I am a resident of the Bull Mountains in the great State of Montana, and I am speaking for a courageous group of people who are ranchers living in the Bull Mountains and who

have formed the Bull Mountains Landowners Association. It was formed in February 1971 for the specific reason to prevent our beautiful and productive area of the Bull Mountains from being strip mined.

The people composing our membership operate family-type ranches and cannot afford to have one acre out of production at any time. I am here because local members of the association pooled money to pay for my plane fare and expenses. There are over 70 ranches in the Bull Mountains area which are subject to being mined. Most of the people living on and owning these lands do not own coal rights, and are surface owners at the mercy of eastern coal companies, the railroads, and the Federal Government. We feel that raising cattle for food presently and keeping the land productive and beautiful for future Americans is more important than mining "cheap" coal, a "one-time" crop.

There are tunnel mines in the area, and we do not condemn them. In fact, we feel that the new Mine Safety Act should be revised to be a flexible law that would apply to each unique area instead of a law that "blankets" the entire Nation with a standard sometimes inappropriate to the situation. The standard's application has caused many small tunnel mines in our area and others to go out of business or into strip mining.

I would like to thank Senator Cooper for testifying to the fact that mines are going out of business due to the installment of machinery to control gas in mines that have gas problems. In our area, we have no gas problems. The machinery costs between \$75,000 and \$100,000, and the machinery is invaluable for them. So several have closed down, and the other two are thinking of strip mining.

Two of her greatest assets in Montana are her unspoiled beauty and her mineral content. She is rightly known as the Treasure State and the Big Sky Country. We do not want these large companies coming to Montana and exploiting the treasure of the mineral and by so doing destroying the beauty of the Big Sky. When the stripped minerals are gone, our God-created beauty is gone forever. Oh, some say it will be reclaimed, but our natural God-created beauty can never be replaced by man, and at present we do not have the techniques to restore areas like the Bull Mountains to production, let alone beauty. This land has been productive for thousands of years and will continue to be so, unless man destroys it. Do we have so much earth that we can afford to destroy and forever disrupt any part of it?

I have here some pictures of undisturbed areas of the Bull Mountains. You can judge for yourselves just what my family and the others will lose if strip mining is allowed to continue.

I have entered these in as part of my testimony when I testified on Tuesday before the subcommittee in the House.

Senator HANSEN. May these be left for the perusal of members of the committee?

Mrs. JOHNSON. Well, I only have one set. I would like to have you see them, though, and I would like too, if possible, I do not know how they would get back here, but if members of the committee could see the area I think it might help a little bit when they see how beautiful it is and the type of country it is.

Senator HANSEN. Everyone would want to go out there.

Mrs. JOHNSON. Yes; they are welcome to come see it at any time and I wish they would.

The Bull Mountains which lie 30 miles north of Billings, Mont., from the divide between the Yellowstone and Musselshell River valleys rising to 4,700 feet at the highest elevation. They are heavily forested with a species of Ponderosa pine and cedar, intermixed with grassy meadows in valleys or draws between sandstone buttes. The Bulls are dryland mountains. Ranchers who live in the sparsely settled area depend on springs and ground water as their primary water source. Game is abundant, including deer, elk, wild turkey, grouse, and other birds.

The Bulls are underlaid with subbituminous coal, some of which has been traditionally mined by underground methods. At one time, Roundup, north of the Bulls, was an important coal producing region, but with the advent of diesel locomotives the market for Bull Mountains' coal declined.

Little of the Bull Mountain coal is owned by private individuals. The overwhelming balance of the coal is held by the Federal Government and the Burlington-Northern Railroad in a checkerboard arrangement, the Federal Government owning the coal under sections with even numbers and the Burlington-Northern, successor to the Northern Pacific, owning the coal under the odd-numbered sections.

By leasing the coal rights, the Burlington-Northern has the virtual power of condemnation of the ranchers' surface rights; the compensation received by the dispossessed will be determined by unequal negotiation or in the courts. How can a court adequately determine the monetary value of a man's life's work? The policy of the railroad in other areas of Montana being strip mined, has been to make its lessee acquire additional lands with unimpaired surface to trade with the railroad for the lands which the lessee wishes to mine. If this practice is followed in the Bull Mountains, it will mean the dispossession of small, individual ranchers and the acquisition of a land monopoly by two huge corporations approaching monopolistic proportions. In addition to the destruction wrought by mining, creation of a land monopoly does not seem to me to be a good idea.

For the past 11½ years we have been besieged by Consolidation Coal Co. Consolidation sent public relations men to Roundup to tell the people the new mining would restore the city's coal economy, which slacked off years ago when the railroads abandoned coal as their locomotive fuel. The ranchers have been keeping Roundup alive ever since. But now, when the railroad can gain a profit from the coal again, they want it. This time when the coal is gone the land will be gone, the rancher will be gone, and there will be a lot less to sustain Roundup.

Consolidation told the people of Roundup that all the empty buildings would be filled with offices. Consolidation even paid for advertising in Time magazine to get Roundup a new doctor. Consolidation was successful with their "snow job" on Roundup and then could move to Billings where it is convenient for them. The result of their promotional blitz on Roundup was division in the community, setting the townspeople and the ranchers at odds against each other.

Consolidation's treatment of the ranchers certainly is different from the treatment of the townspeople. Consolidation's survey and core-drilling crews have been surveying and core drilling without the per-

mission of most of the landowners and continue to do so until they get caught. They have been found cutting fences, gates, locks, and chains. They have been dumping garbage and writing their names on beautiful rock faces with fluorescent paint. They cut 52 trees on one ranch and carried most of them off. The oldest was over 250 years old. They have also been core drilling on Federal Government coal. Consolidation does not have the Federal lease on coal. No Federal leases for coal have been given in this area. When ranchers catch them Consolidation says they are sorry and would like to "wipe the slate clean and start over."

So you can see, Mr. Chairman, their integrity hasn't been very good.

Due to the rough topography of this area, many fences are not on section lines. The section markers are lost in most cases and the witness trees are gone too. Most of the surveys in this area were done around 1883. We are now asking the U.S. Government to resurvey this area so that the Federal Government's coal will be protected as well as public and private land.

Consolidation's reclamation plans are as big a farce as their "snow jobs". The so-called reclamation plans are drawn up by engineers transported from the East who are unfamiliar with the climatic and environmental conditions. Only when they were called on the inadequacies of their reclamation plan did they try to remedy them. The plan looked good on paper but was unrealistic and untried. The irony is, this plan that our association is protesting in State district court has been passed on to another coal company as a model for their reclamation plan.

Gentlemen, in case you've missed the point I've been trying to make it is this: We are a perfect example of how a reclamation law that sounds good to the average Joe is totally ineffective and valueless. We need a law strong enough for the coal companies to do a complete job of restoring the land to its original productivity and which they will be held responsible for cost and outcome. Otherwise they will have to walk away from the vein of coal. Besides Montana's new reclamation law being ineffective the State does not have the funds nor personnel to enforce it.

At this time I would like to submit in evidence at this hearing over 5,000 signatures from people in our area. I quote from the petition:

I am opposed to strip mining of coal until it can be proved that the land can be restored to its original productivity.

According to these people anything less is unthinkable and detrimental to the people in the area and to the United States of America. We do not want our beautiful State of Montana ruined, nor other Western States, in order to decrease the air pollution in the East when the true motive behind strip mining is a higher margin of profit for the coal companies. This greed and irresponsibility of the coal companies will lead to the destruction of our area and others like it.

We, the Bull Mountain Landowners Association, urge that strip mining be prohibited throughout the Bull Mountains. In particular, we request that the Federal Government, which holds coal rights under much of the land, to deny leases to potential strip miners. We urge that Government determine the relative values and merits of strip mining on the one hand, and irreplaceable scenery, wilderness, and

ranchland on the other and decide which shall be more important to future generations.

The next speaker from the Bull Mountain area will give the scientific facts of the area as to why reclamation in the Bull Mountains to original productivity is impossible.

I feel it should be Federal legislation to the poor example of Montana's new mining reclamation law and also use BLM records and advice as to where strip mining be prohibited and also use the advice of the people who live on the land and know it firsthand. I think the term of "restoration to original natural productivity" instead of "best possible restoration" as the Montana law states, should be used.

I hope you act quickly because my home and lands are on the line and what you do here will decide the future of the ranchers in the area.

We are a very good example of what happens under a so-called best-of-the-west reclamation law that has been passed. The Montana reclamation law that was passed this spring, our area is the first one that has come under this new law and they have opened a test pit in the Bull Mountain area of 15 acres. They dig on six and dump on nine.

According to the reclamation law that was passed by the State land commission, the best reclamation possible, according to the State land commission, in the test pit is just to reseed the spoil banks with things like brush and thistle and the like when the spoil bank consists mostly of shale and sand, and do nothing with the pit. If it doesn't work, it is up to the State of Montana to foot the bill. This is the best reclamation possible for the Bull Mountains.

In other words, it is absolutely nothing, it is going to be wasted land.

Senator HANSEN. Well, thank you very much, Mrs. Johnson. I must say I compliment the people of the Bull Mountain area for having sent a very articulate witness back here. You certainly have spoken out, I think very clearly for all of us, the concern you people feel.

I gather, among other things you call attention to, is the fact that your State, like Wyoming, is an arid State, and we do have problems that are unique to this area that call for special treatment. I gather further that the thrust of your testimony is that the present Montana reclamation law, in your judgement, is inadequate to measure up to the past problems posed for it.

Mrs. JOHNSON. Yes; the mining industry helped to write the law and they wrote it so that they could do the least amount of reclamation they had to do. So I think if the Government would write the law without the help of mining, then we might get something that would be of value.

Thank you very much.

Senator HANSEN. Let me thank you very much for coming, I know other members of the committee will be very much interested in reading your testimony.

Mrs. JOHNSON. Thank you.

Senator HANSEN. Mrs. Charter, we are very happy to have you here. I might note for the record we live on a ranch in Jackson. This was owned by the Charters, our very dear neighbors and friends, lifelong friends of a number of years ago, and we are very pleased to have you here.

If I recall correctly, the former Governor of Arizona, Sam Goddard, is a cousin of yours.

STATEMENT OF MRS. BOYD CHARTER, REPRESENTING THE BULL
MOUNTAIN LANDOWNERS ASSOCIATION OF EASTERN MONTANA

Mrs. CHARTER. Yes.

Senator HANSEN. Well, we are certainly pleased to have you here.

Mrs. CHARTER. Thank you very much, Senator Hansen, for making it possible for us to be here today. As you know, I was city born but I have lived on a ranch most of my life and my husband, Boyd, and Senator Hansen, if I may get a little aside in, were boys together herding cattle in the mountains of Wyoming and were privileged to know at that time the last of the real mountain men and trappers, a breed that is no longer existing, and they also got in on that integrity of the old west that has become legend but one doesn't see it very often in reality and I think Senator Hansen has brought that western integrity to Washington and we are very proud of him. I think my husband, who has stayed with the land, has kept that in his dealings with the land and he has been a national environmentalist and conservationist ever since we were in ranching. That is one reason why this is so deep and comes really from our hearts.

Also, as Senator Hansen knows, as ranchers we have been fiercely independent, very scornful of government interference, especially when it is inflexible and domineering. So we can sympathize with industry when they want to be able to operate without inflexible rules over their heads. But, on the other hand, it is the irresponsibility of the industries, the mining and power industries, that have brought us here today and not past irresponsibility. Irresponsibility that is going on right now in the present.

If I may, I would like to say that the third member of the trio, Miss Pfister, was unable to be here but she submitted her testimony and it is a very readable, informative, factual discourse on reclamation in the Bull Mountains in eastern Montana, and I recommend it to you.

Senator HANSEN. May I say it will be included in the record and I shall be indeed most interested in reading it.

Mrs. CHARTER. It is most interesting. We were a little shook up to come to Washington and find and hearing the same sweeping statements we have been hearing from the chambers of commerce all over Montana where the coal companies had got in advance to lay the groundwork for their snow job or their softening up job, as you might say, where the people say, well what do you have to worry about? They will bring your ground back into better production than it had been. We have been to North Dakota to their special area, we have been to Ohio and Pennsylvania, we have seen where the ground is better than it was before or at least it is producing. But if you are familiar with Mr. Faulkner's article in Life, where he defends what is being done in Pennsylvania in reclamation and especially with enforcement where there isn't any political interference, he has to conclude in his article that the State of Montana is still considering strengthening their reclamation laws. In other words, in spite of what they are doing it is still not reclamation.

We wonder when you read in the New York Times article: "Coal Rush On as Strip Mining Spreads to The West," do you read in it "feed" or "greed." Is it coincident with the advent of the big shovel and cheap coal that research on alternative forms of energy has been slowed or abandoned?

I was chatting with a stockbroker the other day and he made a point of studying the prospectuses of the big power companies and other companies, and he said that in the past years they all had a 10-year plan to invest money on alternative forms of research and he said to the best of his knowledge little of this has been done.

In the stockholders report from Pacific Power & Light, they say they are not going to invest great sums of money in further research in atomic energy and other alternative forms of power because "they have coal coming out of their areas."

We wonder if it is coincidence that the railroads are asking to take off their cattle cars and put on more coal cars? Is it coincidence that the oil companies have absorbed the coal companies and are in the process of absorbing agriculture? Is it coincidence that with the advent of cheap coal the power industry is saying "no coal—no power"?

If I may I would like to read from a letter of the five graduate students. They wrote asking if they would please spare the Bull Mountains of Montana. Then they said there is a dire need in this country for citizen support, especially when it comes to things such as the overall energy need. They fail to point out we are making ourselves victims of our own technology, that our architects are designing buildings without windows so we will be completely dependent on electricity for light and air-conditioning and so on.

I will not go into that as I am sure it has been brought up before but we must not forget it. First they pointed out that there wouldn't be any member of the class that would be willing to turn off their favorite TV program to save the Bull Mountains and the five graduates had quite an answer for that. They went on to say if it wasn't for areas like the Bull Mountains you would not have your electric lights, television sets, radios, and electric stoves and all the other comforts of this life that I am sure you enjoy. Our company is merely trying to provide some of the energy needs so that your teacher and yourselves can have many of the comforts of life that you are used to.

They did not mention at this point that they had been in our country for 2 years with their leases, trying to get their coal and, unless they had gotten a firm market for their coal since we left Billings, they have not yet sold their coal. They have sold their test coal after a great deal of effort but they have not had a market for their coal. Commonwealth Edison at first was going to take their test coal through. Through a few delays, caused possibly by the Bull Mountain Landowners Association, they told them they no longer needed it because there was plenty available in Wyoming.

As laymen it doesn't make sense to us that we buy 30 percent of Japan's industrial output and export millions of tons of coal to make this possible. We asked them, how come you export the coal? They said it is the more pollutant type of coal. We said I guess it is OK to pollute Japan. They said it is a better market and we get more money for it. It just doesn't make sense that industry with the fervor, ruthlessness, and greed of the gold rush days can come into a country exploiting the resources and leaving devastation behind.

Is this what the American people want, to lease their land so that they can live in ever-increasing luxury? The Hopi Indians say "No." Four thousand people in Billings, Mont., said "No" by signing petitions. Youth is saying "No."

For over 5,000 years China has lived off the same land. Our Nation is not yet 200 years old and according to the statisticians we will soon have to be taking stars out of the flag, for strip mining in the West will eliminate the State of Ohio from the United States, in land area, that is.

It just doesn't make sense that the BLM, guardian of public lands, has a stated multiple-use policy, and is now leasing these lands for strip mining. It doesn't make sense that coal rights reserved when coal was mined underground should give the right to destroy surface belonging to someone else. And how is the value of a destroyed acre determined?

We have come here with a specific problem for which there is apparently no help available in spite of the National Land Policy Act of 1971 explained by the Honorable Mr. Train, chairman of the Council on Environmental Quality, in his statement to this committee on September 21, in spite of the fact that the BLM has some surface in this area and alternate sections of mineral and coal rights, in spite of the fact that Montana has just passed a law which, except that it has no denial clause, would seemingly fit all the requirements set up by the Federal Government. Any help that could come, would come too late, after the damage has been done and industry is entrenched.

However, I want to add at this time that the reception we have gotten in Washington has not only been heartwarming but it has given us hope that in its own way that the machinery of government can solve these problems and really wants to do it. We want to express here how deeply appreciative we are of being heard before these august committees and being able to see some of the key people that are instrumental in making and carrying out our laws.

This situation of too little, too late, is the very thing this committee is in a position to prevent, and when the facts of strip mining have been so plainly laid out, a wait-and-see attitude will not be tolerated by the people, and this would apply to the 2 years extended to the States to comply, as in the administration's bill. What we see is the other end of the totem pole, you might say. We see industry trying to entrench itself before the laws can be put into effect. Consolidation Coal is trying their best to get in before any regulatory process has a chance to come in and stop them. Then they say we have all this money invested, how can you not lease us the Federal coal.

We must have a national energy policy to control the unreasonable increase in power usage—and wastage—and to determine where strip mining can be permitted, if at all. We need class action laws so that the voice of the people can be heard as well as the voice of industry. And last of all, gentlemen, reclamation as we know it is not going to control strip mining or protect our land.

Mr. Menk, chairman of the board of Burlington-Northern, in this newspaper article which I submit to you, has come out as the great ally of the environmentalist because the Burlington-Northern has 11 billion tons of low sulfur, strippable coal that it is most anxious to make available to industry. The reclamation he refers to in coal strip consists of leveling the tops of spoil banks and trying to get something to grow that sheep might eat.

Enforcers of Montana's just-passed law deemed "best in the West" and demanding the "best reclamation possible," have OK'd

the first plan submitted under this law. It is for a test pit in the Bull Mountains and is to be a test—with no time limit and no limiting of further strip mining until results are known—to see what can be grown on spoil banks.

Do you consider the attempted revegetation of spoil banks reclamation? England and Europe require the stockpiling of topsoil and each different layer of strata, each to be put back in order, compacted, graded, contoured, and brought back into production. This tends to control strip mining almost as effectively as an anti-strip-mining bill. It is interesting that the Common Market is considering importing our coal. Let us face it, the proposed reclamation laws serve only as a smokescreen and to appease the public.

Until we can do better, we had better ban strip mining.

Gentlemen, you have heard today from the makers of the laws, from those who work within our system and our various organizations. If we had the representative of our State land commission here, representative from our soil conservation or agricultural services, I think they would sit here and tell you what a wonderful law Montana has and how responsible they had been in passing it.

Just before that law was put up to a vote, they deleted the denial clause protecting land that could not be reclaimed. That was due to the pressure of industry. The first man that they wanted to control this law was Tom Quinn, who wrote the Knife River coal research bulletin which lays out just exactly how much reclamation he thought the coal companies could get by with without pulling Federal controls down on their heads. He was the man that they hoped would be in charge of our State law.

The law, in our eyes, is pretty ineffective, and it is not doing the work. Do you consider these spoil banks reclamation? Today the gentleman said it is impossible to make Federal overall regulations. We feel it is very simple. In England and Europe, they require the stockpiling not only of topsoil but each successive strata to be put back in order, graded, contoured and put back into production. If this can be done, the land isn't stripped. It might be interesting to note that the Common Market of Europe is interested in buying our coal. They are going to preserve their land. Well, such reclamation laws, I will admit, will be almost as effective in some areas as an anti-stripping law, but nothing less is reclamation.

And other law you pass is merely a smokescreen and serves only to appease the public. Thank you very much.

Senator HANSEN. Thank you very much, Mrs. Charter.

How does this Montana reclamation law to which you referred work? Do you know when it was passed?

Mrs. CHARTER. In April of this year, and the first reclamation plan under the new law was for this test pit in the Bull Mountains areas. Now, our law had two very good points to it that they forgot to delete. One was that it provided for public hearing on these plans, at the discretion of the State land commissioner. Being we were the first, we got a public hearing. His board is made up of the same list that one of our witnesses said they had in their State and made it so effective. This panel said in the recommendations, which were generally ignored, some of them were merely—well, we called some of them the educated guessers, rightly or not. But anyway, we have all

of those set up that look so good on paper. We also have something that we are using right now, which is the right to contest these plans in court, and right now this plan is in court in Helena waiting to come up before the judge.

Now, those are two good points. But we are trying to show that although it is called the best in the West; and the clause, "best reclamation possible under existing conditions require," that is absolutely meaningless.

Senator HANSEN. Well, thank you very much, Mrs. Charter. I know, as one who has often found himself in the same frustrating predicament that characterizes yours and Mrs. Johnson's position in trying to fight big business or big government or whatever. It is discouraging at times to try to press on when you think the odds are overwhelming. I am certain, though, your making the trip you have and representing the people for whom you speak will certainly have an impact on this committee and will add to a total better understanding of all of the facts that we will give serious consideration to as we hope to draft whatever legislation comes out of this committee for consideration by the entire Congress.

I congratulate each of you for having been most persuasive witnesses, people who know what you are talking about, and who speak from a background of understanding that all too few witnesses before the Congress have. You have done an excellent job, and I thank each of you for appearing here today.

Mrs. CHARTER. Thank you very much.

(Subsequent to the hearing, a statement by Ellen Pfister, Jackson, Miss., was submitted in conjunction with the testimony by Mrs. Johnson and Mrs. Charter, and is in the appendix.)

Senator HANSEN. Is Mr. Paul Kaufman here? [No response.]

May I say for the record, Mr. Kaufman's statement will be submitted and included in the record as if read.

STATEMENT OF PAUL J. KAUFMAN, DIRECTOR OF THE APPALACHIAN RESEARCH AND DEFENSE FUND

Mr. KAUFMAN. My name is Paul Kaufman. I live in Charleston, W. Va. I am appearing here today in several capacities. As the Director of Appalachian Research and Defense Fund, I stand before you on behalf of our low income rural citizens who have been victimized by strip mining. I also appear as an interested citizen, a lawyer, and a life-long Appalachian familiar with the problems of my region. Finally, I appear before this body as a former West Virginia State Senator who played a significant role in drafting the 1967 West Virginia Surface Mine Act. This act stood, and now stands, as the most stringent legislation ever enacted to control the strip mining of coal and to assure reclamation of the damage done by this particular mining method.

It was a good bill. Among other things, it required detailed pre-planning, careful mapping of areas to be mined, substantial bonds to assure performance and reclamation in accordance with prescribed standards, and limitations on highwalls, slope and bench. It also included restrictions against surface mining within a specified distance of public roads, churches, schools, streams, dwelling places, and public buildings.

Most importantly, the conservation-minded State Department of Natural Resources, as opposed to the industry-oriented State Department of Mines, was charged with the responsibility for administration of the law. The Director of the Department of Natural Resources was given the power to stop any ongoing operation or declare any part of the State off limits to strip mining if, in his discretion, a number of listed adverse circumstances such as water pollution and rock slides were likely to occur as a result of strip mining activity.

In addition to forfeiture of the operator's bond, the Director was empowered to take various other punitive steps in cases of violation, and a citizen who suffered injury was given the right to institute a suit for triple damages against the offending strip miner.

I worked very hard on this bill, actually authored some of the tougher passages, and was quite pleased when it got out of the committee and was enacted into law. With minor changes, it is still the law in West Virginia.

There had been those who advocated abolition—but I stood firm—secure in the knowledge imparted to me by coal industry spokesmen that the excesses of strip mining could be eliminated, and that a tough law would see the end of the horror stories which were being circulated about an industry which could and would operate responsibly. I was confident that West Virginia at least had been saved from the more frightful consequences of the avaricious pursuit of strip mining. I was mistaken.

I am here to tell you that I was terribly wrong. The ensuing 4 years of control and reclamation have simply increased the havoc and horror stories. Neither production nor destruction has been curtailed. Whether the industry is uncontrollable or whether a good sound law is unenforceable, or a combination of both—I don't know. But take it from one who from bitter experience can tell you—any step short of limiting the extraction of coal to methods other than strip mining, is not going to work, if West Virginia is seen as an example. The very industry which now insists that reclamation can work will see to it that it won't. The cost of good reclamation is prohibitively expensive, and higher profits is the name of the game.

In the face of a rigorously enforced law, the coal industry would be obliged to stick with deep mining, slope mining, drift mining and other approved mining methods. However, as has been the case in my home State, no true restoration law will be rigorously enforced. The industry will not honor, and public administrators will not enforce, a law which accomplishes indirectly something which this body declines to endorse directly—namely, prohibition.

If you are not yet convinced, despite the abundant supporting physical evidence—which I urge you to view first hand—that the Hechler bill should be enacted, I ask you at least to consider a 5-year moratorium. This will give the industry, with governmental assistance, if necessary, a chance to repair the terrible environmental damage caused by them unremittingly over the years; to do what we are assured can be done but hasn't been.

If during the moratorium, the mountains are substantially restored, the scars eliminated, the streams cleansed, the hills and valleys reforested, the land healed, only then can it be said that reclamation will work. Judge yet not by what is said but by what is done. The

industry then will have been given a fair chance to prove that stripping can be conducted in a civilized fashion. They will have overcome the compelling evidence to the contrary with which this Nation is now confronted everywhere the stripper has plied his questionable trade.

Meanwhile, the people of this country can breathe easier while the subject is properly researched. The carnage will have been stopped before it reaches truly unmanageable proportions—if it hasn't already reached that point. At the end of a 5-year moratorium, having been satisfied that the candle is worth the flame, surface mining may be allowed to resume on a basis which the earth and the inhabitants thereof can tolerate—if that be the case.

A truly responsible legislative body would certainly suspend production and distribution of a drug which is known to have harmful side effects. Can strip mining—on the record to date—possibly be treated differently—by a responsible legislative body?

Senator HANSEN. If there is nothing further to come before the committee, we stand adjourned.

(Whereupon, at 4:05 p.m., the hearing was adjourned, subject to the call of the Chair.)

APPENDIX

(Under authority previously granted, the following statements and communications were ordered printed:)

Material submitted by Senator Cooper.

KENTUCKY DEPARTMENT OF NATURAL RESOURCES

RESEARCH INFORMATION

Permits issued	Acres permitted	Acres reclaimed ¹
1967—512	9,336	2,302
1968—537	11,209	6,904
1969—616	13,346	12,200
1970—935	23,692	12,925
1971—914 ²	24,084	9,978

¹ This figure represents a total of acres released for vegetation only and for grading only in that year.

² All figures for 1971 are through Nov. 1.

Note: All figures are on a calendar year basis.

[Excerpts from Congressional Record, July 1, 1970]

Mr. COOPER. Mr. President, during the hearings of the Interior appropriations, I sought an additional \$250,000 for the Forest Service's research center in strip mining at Berea, Ky. I also presented questions to the Forest Service regarding their research to date and their capacity to expand this research at this time. The Forest Service testified that it has "plans to strengthen the work at Berea, Ky., soon as the Federal budget permits."

This research at Berea is very important to Kentucky, but I believe it is also important to neighboring States of Pennsylvania, Virginia, West Virginia and Tennessee—in fact, throughout the region overlying the Appalachian coalfield.

Excellent progress, especially involving revegetation problems, has been made in this research program. Yet the most difficult problems lie ahead. There is an urgent need for expanded research in strip mining mountainous, steep-slope areas. Since one-third of all the coal produced in the Appalachian Mountains is by strip-mining methods, and since most of the coal reserves in these mountains are located in steep areas, the importance of expanded research in this area is quite apparent. The Forest Service's plans lie precisely in this area—research on steep-slope terrain.

Current stripping and reclamation methods are not geared to the critical environmental problems encountered on mountainous terrain. The effects of strip mining are well known. But there is a tragic lack of scientific knowledge about how to restore stripped land on steep slopes. At the present time there is little factual basis for giving sound recommendations on practical measures for rehabilitating stripped mountainous land.

The gross results of strip mining are too plain for any one who has flown over the area or has driven through it. In Kentucky, it is estimated that approximately 10 percent of the outcrops have already slumped and slid down the mountainsides.

The overburden from stripping can create unstable outcrops that are subject to disastrous slides, and that in turn may pollute nearby streams with sediment. Excessive erosion and water from the stripped area may add further pollution in the form of sediments, acids, and other toxic materials—as well as increased flooding during periods of high rainfall. It is estimated that over 5,000 miles of streams and 14,000 acres of lakes have been adversely affected by strip mining in Appalachia.

The damage to land, forests, streams, water, and wildlife cause by strip mining must be alleviated. I appreciate the assurance of the chairman, Senator Bible, and ranking member, Senator Boggs, that this committee will go into the subject next year.

GOVERNOR'S REMARKS : IMPLEMENTATION AND ENFORCEMENT OF THE FEDERAL COAL MINE HEALTH AND SAFETY ACT OF 1969, SEPTEMBER 16, 1971

I am Louis B. Nunn, Governor of the Commonwealth of Kentucky. First allow me to thank you for this opportunity to testify in regard to the Federal Coal Mine Health and Safety Act of 1969.

I would not appear here today as an expert witness or attempt to offer any degree of personal expertise. But as Chief Executive I feel a responsibility to an industry which comprises a major portion of our economy and affects the safety and well-being of the citizens of this Commonwealth.

More importantly, however, there is a sense of personal responsibility and a sincere desire to aid and assist in the safety and security of our fellow men.

It is this concern for physical safety, economic well-being and environmental protection that compels me to say that the Federal Coal Mine Health and Safety Act of 1969 has failed to achieve the good intentions of those in Congress who supported its passage.

The Kentucky experience of the past 21 months since this law became effective has been that instead of helping to solve a serious problem, it has helped to compound the problem.

The law has become an administrative nightmare as well as an exercise in contradiction, confusion and futility.

There have been instances and no doubt testimony will be offered later today to prove this legislation has seriously and unfairly jeopardized lives instead of saving lives.

It has jeopardized the economic stability of a segment of the mining industry.

And it has jeopardized the ecological grandeur of our state.

What appears to be the most glaring mistake of the law is the removal of the distinction between gassy and non-gaseous mines.

This portion of the Act has hit hardest and most inequitably at the small mines, particularly in Eastern Kentucky.

The new and highly expensive permissible machinery required by the new law simply is out of the financial reach of many small operators. And this requirement is even further beyond the understanding of these operators.

No one, either at the federal, state or local level, has yet been able to explain to these operators why they should have to sink huge sums of capital into equipment to be used in gassy mines when their mines contain no gas.

Many of the small mines in Appalachia have been forced to close because of inability to comply with the Act.

Many other have closed before being inspected out of fear of the high penalties provided by the new law.

It is ironic and most unfortunate that while we have finally realized an industrial breakthrough in Eastern Kentucky and in a period when nearly fifty new industries were locating in that part of our state, many able-bodied men have been denied an opportunity to work because of a discriminatory law.

In 1970, 969 underground mines were in operation in Eastern Kentucky, employing 17,321 men.

Today the number of mines has dropped to 820 and nearly one thousand fewer men are employed.

It is tragic that many of those employed at these mines may have no other recourse than to leave payrolls and join the welfare rolls. Surely, this was not the intention of the authors of the law.

The burden is not limited to small mines only. Many large mines are suffering from a supervisory shortage brought about by the wholesale employing of federal mine inspectors. Those supervisory personnel who are left spend much of their time accompanying inspectors on the mine property and are otherwise deskbound by volumes and volumes of paper work.

Unless there is a reversal of the present trend, we may reach a point when there will be almost as many federal inspectors as there are coal mines to inspect.

Almost two years have passed since the law became effective and the most knowledgeable people in the Bureau of Mines and the industry are still trying to determine its full meaning.

Interpretations are still being attempted, but seemingly with little success.

It must be evident that if those responsible for implementing the law cannot agree, the coal operators could hardly be expected to understand how they are to comply.

In looking at Kentucky's mine safety record it shows that the Commonwealth covered a period of almost twenty-five years without a major disaster. The year before the Act went into effect (1969) the Commonwealth enjoyed its best year from a coal mine fatality standpoint. Thirty-three miners lost their lives in 1969 as compared to 37 to this date in 1971. This in itself shows that the Act is not working.

Almost as distressing as the adverse affect the new law has had on the safety of the coal miner is the devastating setback it has dealt to Kentucky's environment.

As more and more small mine operators have been forced to close, more and more strip mine operations have been started.

In 1968, there were 189 surface mining operations in Kentucky. Today, that number has increased more than three times. Now there are 556 strip mine operations.

Production figures reflect the same disturbing trend. In 1969, underground mines produced 64 million tons of coal in Kentucky, while surface mining operations yielded 44 million tons.

Last year, however, underground mines produced only 63 million tons, while the figure for surface operations skyrocketed to 62 million.

These statistics in human, economic and environmental damage vividly underscore the need for immediate remedial action by the Congress.

It should be obvious to all that if the Kentucky coal industry is to remain sound and is to provide safer, more rewarding employment for our people and is to flourish in compatibility with our environment, the Congress must take another look at the 1969 Act.

To show further why such action is needed, I have asked a team of five experts from Kentucky's nationally respected Department of Mines and Minerals to appear with me here today.

Together, these men represent almost a century and a half of mining experience.

They have experienced first hand the frustrations inherent in the Coal Mine Health and Safety Act.

They are: Commissioner Kirkpatrick; Assistant to the Commissioner, J. H. Mosgrove; Cecil Sherman of the Martin District; Everett Bartlett of the Hazard District; and James Thorp of the Western Kentucky District.

Mr. Kirkpatrick is from a mining family whose entire working career has been associated with underground coal mines in Muhlenberg County of Western Kentucky. Mr. Kirkpatrick has always had an interest in mine safety having worked with several safety organizations during his career.

Mr. Mosgrove has been associated with the mining industry of Kentucky over forty years, having started as a miner at a very young age in Letcher County. His career has included working as a mine laborer, supervisor, and he has been directly engaged in safety work for over 25 years.

Mr. Sherman started his career in 1931 as a mine laborer. He has advanced from that position through to the job he now holds as District Supervisor with the Department. Many years of Mr. Sherman's background have been directly connected with safety promotion.

Mr. Bartlett has been associated with mining in Kentucky for over forty years. His work experience ranges from mine laborer to mine superintendent. He has served with the Department of Mines and Minerals almost seventeen years.

Mr. Thorp, supervisor of the West Kentucky District has worked in the West Kentucky coal fields for a number of years. He was very active in safety team work and has served as a mine laborer and supervisor.

All these men are well qualified by their experience as laborers, supervisors and safety inspectors and administrators.

They are here to help, not hinder.

They are here to offer constructive criticism, not to obscure the facts.

We do not ask that changes be made at the expense of lives because we fully realize that productivity must be judged in human terms. But neither shall we be silent as unjustifiable and illogical obstacles are placed before productivity.

We ask only that necessary revisions be made in order that we might have legislation that can be readily understood both by those charged with its imple-

mentation and those who are required to comply . . . legislation that will effectively assist us in attaining a new high in the safety, economic and environmental standards of the coal industry.

[From the *Courier-Journal*, Feb. 14, 1971]

ONLY A BIG CHANGE IN ATTITUDES CAN MAKE COAL MINING SAFE

Mine disasters produce a pattern of public and official reaction that through the years has become dreadfully predictable. There are the initial shock, the outraged demand for improved mine safety, and eventually the official study that always seems to leave things much as they were. A look at the newly-appointed federal Mine Safety Research Committee indicates that the old process is being repeated.

The 1969 Mine Safety Act under which the committee was appointed states that the Interior Secretary shall appoint people "who are knowledgeable in the field of coal mine safety research." Few of the appointees, who include a former airline stewardess and various other Republican faithfuls, qualify. Whether or not this makes the committee illegal, as some safety seekers are charging, it makes it bad, and it lessens the chances that it can or will produce anything substantial in the way of mine safety techniques.

This is tragic not just for the endangered miner but for the industry as a whole, and for the states, such as Kentucky, that have so large a stake in a sound and responsible coal industry.

Last Sunday's special section of *The Courier-Journal & Times*, devoted to a study of the Hyden mine explosion that took the lives of 38 miners in December, gave a distressing picture of the lives of miners and their families. It also showed a disturbing tendency on the part of everyone concerned with the disaster—the men, their families, the operators, even the inspectors and state officials—to accept danger and even death as inevitable aspects of mining. If there is one thing in mining that must be changed, it is this fatalistic attitude.

A NEW ATTITUDE IS NEEDED

Death and injury statistics show that the mines are not safe now, and there is reason to doubt that even tough laws and rigid enforcement alone will make them so. More miners were killed in the first year of the new safety law's enforcement than in the year before. What is needed is a new attitude on the part of everyone connected with coal—miners, operators, the union, enforcement agencies and the government—that gives priority to the welfare of the individual man underground. We need a whole new approach under which all concerned parties agree that while we must have the coal, it must not be produced at the cost of the miner's life or health.

Let's concede that the initial responsibility lies with the miner himself, whose carelessness or ignorance is all too often the cause of his death or maiming. This does not excuse others—the operators, union officials, inspectors, and state and federal authorities—of their share of the responsibility for mine safety.

Current disagreement over what constitutes mine safety reflects in part the failure of the federal government to carry on sufficient meaningful research. It has been charged that current ventilation requirements, aimed at reducing dust and explosion hazards, actually pose a threat to miners. As Cloyd McDowell (Kentucky's representative and one of the few good appointments to the research committee) points out, research could settle this dispute, and in dozens of other ways show operators how to produce more humanely as well as more efficiently.

States can and must do far more than they have done to date. Training, including safety education, must be mandatory for every man going underground. There must be more inspectors, and they must be better trained and paid. State laws must be brought up to federal standards. Supervisory agencies should include representatives of miners as well as operators.

But the impulse for mine safety is going to have to come from the top, and that means from the Bureau of Mines, the Department of the Interior and the White House. Ultimately, it must depend on the attitude of the President, and his determination to make mining safe, regardless of the effort, cost or political repercussions involved. The membership of the Mine Safety Research Committee is a disheartening indication that neither the President nor his administration has yet been converted to the necessary attitude.

[From the Courier-Journal, Sept. 9, 1971]

COOPER CRITICIZES MINE'S BUREAU'S SAFETY ACTIVITIES

(By Ward Sinclair)

WASHINGTON.—Kentucky Sen. John Sherman Cooper, abandoning his customary reserve, has sharply criticized the U.S. Bureau of Mines' handling of coal mine safety matters.

Cooper called the safety situation "discouraging" and expressed dissatisfaction with the bureau's response to complaints, particularly from small Kentucky operators, about enforcement.

The occasion for Cooper's criticism is the bureau's plan to hold an "information gathering" session—the third in a series of six around the country—at Lexington, Ky., next week.

The Kentucky senator said, "These meetings don't get down to the gut issues—and they have got to do that."

These public meetings evolved in part from a proposal made earlier this year by Cooper, who urged his Republican counterparts at the interior department to seek expert advice in an effort to resolve technical problems some operators have with the law.

The first session, in Washington July 1 and 2, produced a parade of coal officials, operators and congressmen leveling criticism at the bureau for its administration and enforcement procedures. For their part, bureau officials gave a lengthy defense of their record.

A second meeting in Denver last month had such a sparse turnout that a scheduled second day was cancelled.

The Lexington meeting will be Sept. 16 and 17 at the Phoenix Hotel. Persons wishing to appear on the program have until 5 p.m. tomorrow to notify the bureau here.

MORTON TO GET RESUME

According to the bureau's plans, after Nov. 22, when the record is complete, an extrapolation of pertinent facts and recommendations will be sent to Interior Secretary Rogers C. B. Morton.

Harlan Countian Cloyd McDowell, president of the National Independent Coal Operators Association, (NICOA), agreed with Cooper and said that his group strongly opposes the bureau's present approach.

McDowell, who took part in the July 1 session here, said the basic technical problems are not being dealt with at the meeting and important time is being consumed that could be better applied to dealing with the main issues of enforcement.

He noted a ray of hope in the situation, however, saying that at the Lexington meetings he will present the results of a NICOA survey of operators, which is designed to pinpoint the most urgent problems facing the industry.

"They can go through all these meetings," McDowell said, "but our approach will be much quicker. The bureau has agreed to have a workshop with us at Moorhead State University in late October to discuss the problems."

A bureau spokesman confirmed that the agency intends to meet with the operators after they have identified their most pressing problems. The spokesman added that the bureau does not plan to discuss "any amendments, changes or subversions of the law."

McDowell said he thinks the most pressing enforcement problems to be dealt with at the workshop will include ventilation requirements, electrical requirements and belt haulage standards.

"I'm very encouraged that they're responding," McDowell said "I think we'll get something done and I'm hopeful that it will improve the safety record."

[From the Courier-Journal, Sept. 9, 1971]

STRIPPING GAINS: DEEP MINES LOSING COAL SALES BATTLE

(By David V. Hawpe)

The deep mining of coal—an industry through which Kentucky helped America build its industrial empires—is faltering in the crush of strip-mine bulldozers.

Competition from strip-mining, combined with a weak coal market and a new safety law, has sent Eastern Kentucky's deep-mine-based coal economy into a severe slump.

The federal Coal Mine Health and Safety Act took effect in 1970, and in that year Kentucky's underground coal production was about the same as the previous year—63 million tons. Surface production that year rose by a startling 17.5 million tons to 61.8 million.

This year the number of underground coal mines has dropped in every coal district except one, while the number of surface mines has risen sharply in every district.

The Pikeville area has lost 47 deep mines and gained 27 surface mines. The Hazard district has lost 30 deep mines and gained 59 surface mines, and the Harlan coalfield has lost 44 deep mines while gaining 30 surface mines.

The Martin district is the only one that has gained in underground mining. The district now has 71 more underground mines in business than last year, along with 53 more surface mines.

The underground mining increase has come largely in the Floyd County portion of the Martin district. Surface mining is difficult in Floyd County and few permits are granted, but demand for the metallurgical coal produced there has continued stronger than that for utility coal.

Western Kentucky, on the whole, has not been as deeply affected as the Eastern coalfields, but nevertheless has lost two deep mines while gaining 29 surface mines.

HUNDREDS OF JOBS GONE

Hundreds of jobs apparently have been lost as mines have closed, with competition-plagued deep mine operators unable or unwilling to comply with the new safety law. The unemployed cannot be absorbed in the new surface mining, since surface operations require fewer workers.

While the rush into surface mining has continued, the price of coal has plummeted from the breathtaking levels achieved last summer. Coal is bought by the electric utilities for half the price paid last year, or less.

Steel mills in the East and Midwest continue to run at half-capacity. The steel giants are buying from the mines they own, rather than from independent producers.

LAYOFFS ARE FREQUENT

The general malaise has caused layoffs in some areas of Eastern Kentucky, and many mines are reducing production schedules maintained earlier this year. Here are some examples:

South-East Coal Co. laid off 92 men in its Letcher County mines, and 14 at its Estill County preparation plant.

Turner-Elkhorn Coal Co. of Drift, cut back its production schedules by 20 per cent.

Marlowe Coal Co. eliminated an entire shift of 22 men.

Coal operator Elmer Whitaker of Hazard said, "I haven't laid anybody off, but I should have. I'm carrying some people now."

Coal shipments from the field served by the Eastern Kentucky district of the Louisville & Nashville Railroad are down by some 200,000 tons over last year at Great Lakes ports, according to the Ore and Coal exchange.

SOME FAVOR BAN

Some deep mine operators are so disturbed over the impact of surface mining that they say privately they support a ban on it.

"Here is what is at the root of it," said I. H. Buchanan, a Hazard deep-mine operator. "Surface mines produce about 50 tons of coal per man each day they run, while underground mines produce about 15 tons per employee."

"The new coal mine law has meant we are spending about 30 per cent more to produce the same amount of coal, because of the new equipment and procedures called for in the law," Buchanan added.

Harry LaViers Jr., operator of SouthEast Coal Co., said compliance so far has meant a 40 per cent cost increase for his firm.

LaViers said the big utility companies bought up coal at a tremendous rate last year, and now can refuse to buy coal unless they are given very low prices on it. Buchanan said many of the utilities have 200- to 300-day supplies of coal stockpiled at their generating plants, so the demand "is not there."

"It will take 12 to 24 months for this part of the market to straighten itself out," Buchanan added.

KENTUCKY LEADS IN FIELD

Kentucky deep mines are particularly hard hit by the mushrooming surface mine industry, since Kentucky is the biggest surface mining state.

Almost one-fourth of the surface-mined coal produced in America last year was produced in Kentucky—about 63 million tons. The nearest state to Kentucky was Ohio, with 37 million tons.

A close observer of the impact of the surface mine industry's impact, as well as the impact of the poor market and the federal law, is the chief of the Pikeville district for the Department of Mines and Minerals, Everett Brown.

Brown said, "The small underground truck mines are going out . . . that's all there is to it."

Kentucky Coal Association President Fred Luigart Jr. said, "There definitely has been a softening in prices, but that has been going on for at least six months. Things got out of line last year because there was not enough production."

Luigart said he was unaware of any widespread layoffs or economic dislocation caused by the slump in the coal industry.

Mines operated by the steel corporations—U.S. Steel, Bethlehem, Republic, Wisconsin, National, etc.—are not affected in the same way as mines that sell coal on the open market.

Neither are the large mines which have long-term contracts to supply utilities. (Most of the Western Kentucky field, and many big Eastern Kentucky producers fall into the category.

PINCH FELT ELSEWHERE

However, some of the big strip-mine operators are feeling the pinch. William Hall, head of the massive Marty Corp. Mines in Breathitt County, said, "We are about in the same situation as everybody else."

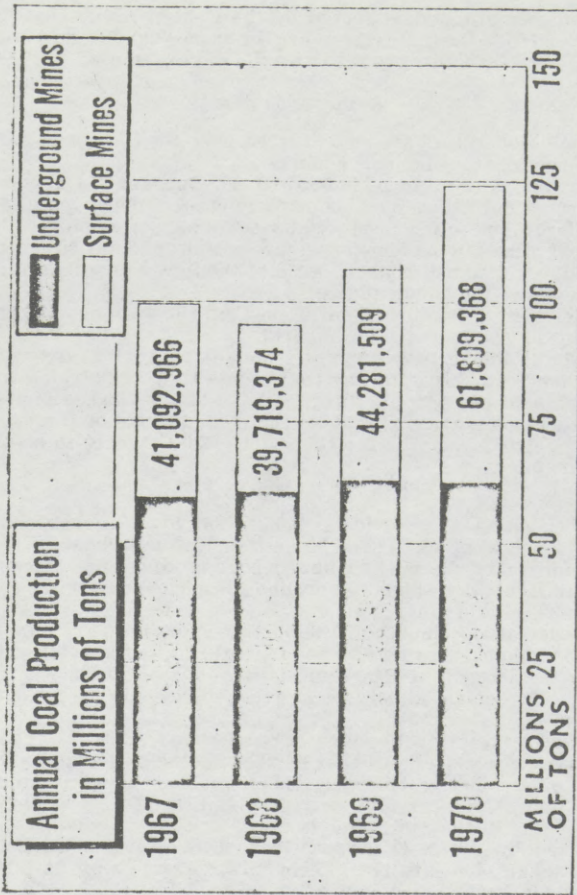
He said he has not taken anybody off the payroll as a result of the bad market, but he added, "We are not replacing anybody if they leave, either. We have some other activities besides coal mining, and we have been using some men there too."

Operator B. F. Reed, a leading industry spokesman, said, "It is hard to reconcile what we had a year ago with what we have today. We have gone from one extreme to another. It is difficult to see what is going to happen."

Pikeville attorney Henry Stratton, a close observer of the coal industry, said he attributes most of the problem to the new federal safety law. "People really ought to be told what it is doing to the coal economy, which is all we have here. Besides the fact that the law is working against the end for which it was supposed to have been designed—the improvement of safety in underground mines."

Tipple operator Joe Newell, of Letcher County, said his loading docks have no coal to sell, since producers are bringing so little to them. His operations are "off 75 per cent."

Newell said, "This has just about put small operators out of business."



REPORT TO THE
KENTUCKY COAL MINE RESEARCH INSTITUTE

RESEARCH POSSIBILITIES AND EVALUATION OF
PROBLEMS IN COAL MINE SAFETY AND TRAINING
IN EASTERN KENTUCKY

BY

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CONTENTS

	Page
INTRODUCTION	1
Purpose of Investigation	1
Methods of Investigation	2
ACKNOWLEDGEMENTS	4
FEDERAL HEALTH AND SAFETY ACT OF 1969	5
Major Provisions of the Act	5
Health Standards of the Act	5
Safety Standards of the Act	6
Enforcement of the Act	6
EFFECTS OF THE FEDERAL COAL MINE HEALTH AND SAFETY ACT	7
COMPLAINTS COMMON TO MOST MINES	8
The Gassy Classification	8
COMPLAINTS COMMON TO SPECIFIC MINES	13
Conclusions	15
Recommendations	15
POSSIBLE RESEARCH IN UNDERGROUND MINES	16
APPARENT DEFICIENCIES IN TRAINING AND ATTITUDES OF MINERS	19
Conclusions	19
Recommendations	20
TRAINING OF MINERS IN HEALTH AND SAFETY	22
Conclusions	23
Recommendations	23
Other Recommendations	24

	Page
TRAINING OF MINERS IN COAL MINE	
PRINCIPLES AND SAFETY	26
Present Method of Coal Mine Training	27
Conclusions	28
Recommendations	28
SURFACE MINING IN EASTERN KENTUCKY	33
Public Criticism	33
Conclusions	35
Recommendations	35
POSSIBLE RESEARCH PROJECTS IN SURFACE MINES	37
Other Research Possibilities	38
POSSIBLE PUBLICATIONS FOR THE KENTUCKY COAL	
MINE RESEARCH INSTITUTE	39
Educational Publications	39
Informational Publications	39
SUMMARY	41

DIGESTPURPOSE OF INVESTIGATION

This report summarizes the results of an investigation conducted for the Kentucky Coal Mine Research Institute in eastern Kentucky aimed at evaluating problems in coal mine safety and training and research priorities.

FINDINGS AND CONCLUSIONS

The Federal Coal Mine Health and Safety Act of 1969, while implemented for the safety of coal miners, has caused confusion and economic hardship for most mine operators in eastern Kentucky. Accident reports indicate that fatalities have increased since passage of the act.

Complaints made by coal operators and miners concerning the act may be placed into two "categories"--those common to most mines and those common to specific mines. It is concluded that these "categories" of complaints reflect the diversity of conditions in mines, and that the 1969 act is too inflexible to provide maximum safety under a wide range of mining conditions. It is recommended that immediate research and testing in several mines might offer solutions to some of the immediate problems in such areas as ventilation, dust control, and haulage design.

Accidents and loss of production may be traced in part to deficiencies in training of coal miners. Many miners apparently have low educational levels. Miners also tend to "drift" from mine to mine. Absenteeism is high at some mines and many miners show a lack of concern for their own safety.

Perhaps certification of miners by the state is desirable to insure that every miner has at least some training.

An extensive study of present miners is recommended to guide the development of training programs for new miners. Educational programs might also include the principles of economics and consider also the miner and his family in terms of safety programs.

The 1969 act requires mine operators to provide a program of training and retraining for employees in health, safety and for certification in conducting certain tests in the mine as required by law. A major problem of these training programs is that of reaching many men scattered throughout a large area. It is recommended that:

- Programs of instructor training be initiated to reach more men.
- The use of mobile training units be considered.
- The development of a clearinghouse for educational material pertaining to health and safety be considered.

With the complexities of modern mining techniques a re-examination of training methods in coal mine principles is needed. Accident reports show that most mine accidents could have been avoided and that carelessness, disregard for or ignorance of safety rules or the lack of knowledge of how to do a particular job is usually the cause. The present method of training is often the "learn by doing" method where unsafe work habits are easily acquired.

It is concluded that every miner should receive comprehensive training in coal mine principles as well as health

and safety. In order to accomplish this goal the Kentucky Coal Mine Research Institute might:

- Establish extension classes dealing with coal mine principles near coal mine communities.
- Consider the establishment of a permanent training center with classroom, underground mine surface mock-up, and underground mine facility for actual experience in an essentially non-producing mine.

Surface mining accounted for about 48 percent of the total coal production in Kentucky in 1970 and has increased steadily during 1971. There has been much public criticism aimed at surface mining, but many responsible coal operators argue that land-use benefits may be derived by surface mining methods.

New federal and state regulations present new problems to be considered by surface mine operators, both as to health and safety practices and to pollution controls.

It is recommended that:

- Programs be developed for the training of equipment operators with provisions for certification of surface mine foremen.
- Consideration be given to the future use of land to be surface mined.
- Research be considered in the treatment of mine water.

INTRODUCTION

This report is respectfully submitted to the Kentucky Coal Mine Research Institute Advisory Council. It summarizes the results of an investigation of mining areas of eastern Kentucky conducted by the writer, David K. Hylbert, Assistant Professor of Geoscience, Morehead State University, Morehead, Kentucky.

PURPOSE OF INVESTIGATION

The Kentucky Coal Mine Research Institute was formally organized on April 30, 1971 at a meeting at Morehead State University. The Institute was organized as a response to the many problems facing the coal mining industry in areas of health and safety for miners and from the standpoint of environmental control. At present, the Institute is composed of an Advisory Council which consists of representatives of the coal mining industry, various federal and state agencies, and Morehead State University. Elected officers are: Mr. Cloyd McDowell, Chairman; Dr. Morris Norfleet, Vice Chairman; and Mr. George Evans, Secretary.

As originally outlined, the purposes of the Kentucky Coal Mining Research Institute were:

- (1) To identify specific problems in the area of mining health and safety which need immediate research attention.
- (2) To study problems that would require a longer period of research and development to bring about results and establish priorities on the immediate and the long range problems for program development possibilities.

(3) To identify the areas in which additional trained personnel will be needed by the coal mining industry and to assist in developing programs to provide the needed trained personnel.

(4) To identify programs of an educational nature, that would benefit the mining industry.

(5) To establish an interdisciplinary and interagency approach to pull together all of the resources within the state of Kentucky to focus on problems relating to coal mine research.

(6) To arrange for on-site field laboratory experiences for researchers involved in the Institute and place at their disposal the various pieces of equipment and other research information which would be used in this endeavor.

As a preliminary procedure, it was proposed by the Institute that an individual spend the summer months in the eastern Kentucky area in order to study problems confronting the coal industry and to provide information relevant to the development of short and long range research and training priorities. This report contains the results of this investigation.

METHODS OF INVESTIGATION

During the course of this investigation, from June 1, 1971 through August 15, 1971, underground mines, surface mines and reclaimed surface mine sites were studied in order to familiarize the writer with mining operations and problems confronting mine operators and miners. Interviews were held with

coal mine operators, working miners and officials of state and federal agencies. Mining journals and other literature pertinent to this study were consulted. The Annual Reports and Bulletins of the Kentucky Department of Mines and Minerals, and the Bureau of Mines Accident Reports were especially helpful in analyzing production and safety conditions in mines.

It should be emphasized that this report considers only the eastern Kentucky coal industry, but that many of the conclusions may be applied to western Kentucky and other areas as well, especially to the neighboring states of Tennessee, Virginia, and West Virginia.

The writer would also like to emphasize that conclusions presented in this report are his own and do not reflect the conclusions of the Kentucky Coal Mine Research Institute or Morehead State University.

ACKNOWLEDGEMENTS

The writer would like to express his appreciation to the officers and members of the Kentucky Coal Mine Research Institute Advisory Council and to the many coal operators, mine supervisors, representatives of the Kentucky Department of Mines and Minerals, U. S. Bureau of Mines, and officers of coal associations who offered many helpful suggestions pertinent to this study. Arrangements were also made for the writer to tour several underground and surface mines and this help is also appreciated.

FEDERAL HEALTH AND SAFETY ACT OF 1969MAJOR PROVISIONS OF THE ACT

The Federal Coal Mine Health and Safety Act of 1969 (Public Law 91-173) repealed the Federal Coal Mine Act of 1952. The purpose of the 1969 act as declared in Section 2 (g) is:

"...it is the purpose of this Act (1) to establish interim mandatory health and safety standards and to direct the Secretary of Health, Education, and Welfare and the Secretary of the Interior to develop and promulgate improved mandatory health or safety standards to protect the health and safety of the Nation's coal miners; (2) to require that each operator of a coal mine and every miner in such mine comply with such standards; (3) to cooperate with, and provide assistance to, the States in the development and enforcement of effective State coal mine health and safety programs; and (4) to improve and expand, in cooperation with the States and the coal mining industry, research and development and training programs aimed at preventing coal mine accidents and occupationally caused diseases in the industry."

Major provisions of the act include mandatory health and safety standards applicable to all underground coal mines. As originally enacted, interim safety standards became effective on March 30, 1970 and interim health standards on June 30, 1970. However, the Secretary of the Interior is impowered to promulgate improved standards as deemed advisable based on research demonstrations, experiments and such other information as may be appropriate.

Health Standards of the 1969 Act

Health standards of the act include the following areas:

(1) respirable dust, (2) dust resulting from drilling rock,

(3) noise exposure levels, and (4) provisions for medical examinations.

Safety Standards

The major areas of coverage provided by the act relevant to safety include: (1) roof support, (2) ventilation, (3) electrical systems and equipment, (4) combustible materials and rock dusting, (5) blasting and explosions, (6) fire protection, (7) emergency shelters, (8) mine communications and (9) hoisting and mantrips.

The act requires each mine operator to submit suitable roof control and ventilation plans for approval by the Secretary of the Interior. However, electrical requirements are to be applied uniformly to all mines.

Enforcement of the Act

In order to insure compliance of mandatory health and safety standards provided by the act, the Department of the Interior is charged with an inspection program designed to protect the health and safety of the miners. The act gave the Bureau of Mines broad authority to enforce standards and to correct unsafe or unhealthy conditions. Mine operators who are found in violation may be issued violation notices or have penalties assessed against them. Coal mine operators are also required by the act to conduct certain inspections and to provide inspection reports to the Bureau of Mines.

EFFECTS OF THE FEDERAL COAL MINE HEALTH AND SAFETY ACT

The 1969 act has undoubtedly improved working conditions for miners in many respects. However, many people associated with the coal industry in eastern Kentucky have charged that the act has actually created hazards.

According to figures from the 1970 Annual Report of the Kentucky Mines and Minerals, 3,274,105 tons of coal were produced in Kentucky per fatal accident in 1969 compared to 1,407,959 tons per fatal accident in 1970. A total of 33 men were killed in Kentucky coal mines in 1969 compared to 89 in 1970, and 26 fatalities have occurred through June, 1971.

It might be argued that the increase in mine accidents has resulted because the coal industry has been much more active since the 1969 act with more man hours of exposure. However, it would seem logical that such an improved safety act would result in a significant reduction in accidents even with increased activity in the mines. During the course of this investigation, interviews with management personnel and miners during visits into underground mines disclosed many complaints concerning the 1969 act. It was found that some complaints were common to practically all mines visited, whereas some complaints were voiced at only certain "categories" of mines.

COMPLAINTS COMMON TO MOST MINESThe Gassy Classification

Prior to the enactment of the Federal Health and Safety Act of 1969, the Bureau of Mines recognized a twofold classification of mines based on the presence of methane - gassy and nongassy. The gassy mine was one in which tests with a flame safety lamp showed the presence of methane, a gas ignition had occurred, or an airs sample taken one foot from the face, rib and roof indicated methane gas in quantity greater than 0.25 of 1 percent. Conversely, a nongassy mine was one where gas had not been detected by a flame safety lamp, no gas ignition had occurred, or where gas had not been found in quantity greater than 0.25 of 1 percent in an airs sample taken one foot from the face, rib and roof.

Testimony given by several leading authorities in the coal mining industry in Kentucky and Virginia before the U.S. Senate Subcommittee on Labor prior to the enactment of the Federal Health and Safety Act of 1969 argued against the abolishment of the distinction between gassy and nongassy mines. It was pointed out that in 1969, about 5 percent of the mines in Kentucky were classed as gassy and that if all mines were to be classed as gassy the cost of converting nonpermissible equipment to permissible as required in gassy mines would cause the closing of many small mines. It was also pointed out that mine explosions can be traced to human carelessness, smoking, or improper procedures in blasting and not to gassy conditions in a mine properly classed as nongassy.

However, the advice of such testimony was not followed and provisions in the 1969 act now force all mines to operate as if they are in fact gassy.

In the course of this investigation, practically everyone interviewed in eastern Kentucky, including coal operators, working miners, and some federal and state personnel were personally opposed to classifying all mines as gassy. In fact, this single part of the 1969 act is protested more than any other.

More important than personal opinion, however, is the fact that the prohibitive cost of converting nonpermissible equipment to permissible or to replace nonpermissible equipment has caused many smaller mines to close as was predicted. Pike County, which is the leading producer of underground coal in Kentucky, had approximately 615 underground mines operating in 1970 according to official estimates. At present, Pike County has only about 275 mines operating with more predicted to close. This trend is present in other counties in eastern Kentucky as well. In addition to the prohibitive cost of permissible equipment, other factors have contributed to the closing of small mines. Many of these mines were in existence before enactment of the 1969 act and were developed and engineered in such a way that compliance with new requirements is much more difficult and costly than for a new mine. Also, many small mines have not developed the management capability to cope with the complexities and bookkeeping involved in complying with the 1969 act. The closing of small mines is also

making an economic impact on communities where coal is the major local industry.

Mine explosions and ignitions have continued to occur in Kentucky as was predicted. However, these have been caused by carelessness, ignorance of or the disregard for safety regulations in existence prior to the 1969 act and not by gassy conditions. An example is the mine disaster of December 30, 1970 at the Finley Coal Company, Leslie County, Kentucky where 38 men lost their lives. According to the Kentucky Department of Mines and Minerals, this mine explosion obviously resulted from the use of explosives which were not legal for underground use.

MULTIPLE PROTECTION FOR BELT LINES

In addition to fireproof conveyor belts, the requirement that such belts be further protected by deluge-type water spray systems is a common complaint, largely because of the needless added cost involved.

FOREMAN'S DUTIES

Many complaints center around the additional duties for which the mine foreman is responsible under the new act. These duties involve extensive record keeping, testing for methane, roof conditions, dust control, etc. Many foremen maintain that they cannot conduct these duties and direct their men at the same time.

PENALTIES

The major complaint concerning penalties assessed by the Bureau for noncompliance is that priorities have not been well established which results in confusion for the coal operator. Operators complain about excessive penalties for failure to comply with standards that have nothing to do with safety.

DECREASE IN PRODUCTIVITY

Most mine operators indicate that productivity has decreased about 20% to 25% because of the 1969 act. Coupled with this complaint is that many miners are so preoccupied with compliance that too little regard is given for safety practices.

RECORD KEEPING

Records required by the 1969 act are so time consuming to maintain that supervisory personnel at all levels are hard pressed to keep up with them.

REQUIRED EQUIPMENT CHANGES

Numerous complaints have been made by coal operators concerning costly equipment changes, especially electrical, that they have been instructed to make by Bureau inspectors, only to have inspectors inform them at a later date that the same changes must be altered again.

SUPERVISORY PERSONNEL

Most coal operators have indicated a need for the training of supervisors in mines. The shortage of qualified supervisors appears to be caused at least partly by (1) the reluctance of men to assume the added responsibility of a supervisory position, especially the added responsibilities imposed by the 1969 act and (2) the loss of supervisors from mines because of recent recruitment drives for mine inspectors.

COMPLAINTS COMMON TO SPECIFIC MINES

Many complaints concerning provisions in the 1969 act vary from one mine to another. Some of these are discussed below:

VENTILATION

The act provides that a minimum of 3,000 cubic feet per minute of air shall reach each working face and that 9,000 cubic feet per minute shall reach the last open crosscut in any pair or set of rooms. For most mines in eastern Kentucky this represents an increased amount of air and is designed to help eliminate the danger of gas accumulation and oxygen deficiency, and provide adequate dust control. Complaints concerning increased ventilation include:

(1) There is little if any danger of gas accumulation in a mine previously classed as nongassy so increased ventilation is not necessary for gas control.

(2) Large quantities of air tend to create a dusty condition and cause float dust to be carried great distances along travelways.

(3) Too much ventilation creates a serious hazard by bringing in large amounts of humid air during the summer which causes wet, unstable roof conditions along travelways. However, during the winter, large amounts of dry air increases the dust problem by drying the mine. In addition, several mines reported freezing conditions extending long distances into travelways and low temperatures at the working face.

(4) The installation of check curtains has caused an increase in haulage accidents. These curtains are used for the control of ventilation in mines and must be hung across travelways used by shuttle cars. Several fatalities have resulted from shuttle cars running through check curtains and colliding with an obstruction in the roadway or the rib.

WATER SPRAYS

Water sprays on the working face are beneficial for dust control. However, some miners complain that too much water makes working conditions very unpleasant, especially if the mine temperatures are low.

TRAILING CABLE SPLICES

Many coal operators believe that the requirement permitting only one temporary cable splice in 24 hours adds nothing to safety and is unreasonable. However, other operators believe that this requirement is beneficial in that they now tend to take better care of their cables.

BELT HAULAGE AND POWER CONNECTION UNITS

Several mine operators pointed out that the requirement that conveyor haulage entries and power connection units be on intake air would carry smoke and fumes of a fire originating on a belt or power unit to the working face. Others maintained that this would not be a problem if a separate entry for intake air is provided. This is reasonable, but it is not a solution for mines where such separate entries are not practical or for very small mines.

CONCLUSIONS

After visiting mines of various sizes operating in several different seams of coal it soon becomes obvious that problems related to one mine may not apply to other mines, even in the immediate area. Such diverse factors as coal height, top and bottom conditions, the presence or absence of water, and type of mining method used present individual problems that must be dealt with in the safest possible manner. It is felt that many complaints, especially those that vary from one mine to another, are the result of the fact that the 1969 act is too inflexible in consideration of differences in mining conditions. For example, in mines operating in low coal, complaints about requirements of too much ventilation and water sprays at the working face causing wet conditions are common, whereas operators mining high coal do not tend to have these complaints. This is understandable if the miner must crawl rather than walk.

This is not to say that every mine should be operated under a different set of regulations. However, there is a very strong possibility that hazards may be introduced if all mines must operate strictly under the same regulations.

RECOMMENDATIONS

Recommendations concerning complaints voiced by mine operators and others are not designed to circumvent the 1969 act, but to assure that the ultimate in safety might be achieved for every miner. The only means by which this objective can be accomplished is through research and testing in mines in the immediate area.

POSSIBLE RESEARCH IN UNDERGROUND MINES

It would be beneficial to the health and safety of miners if the following studies were conducted:

(1) Ventilation requirements, rock dusting and water sprays on equipment are basically designed to eliminate the danger of gas ignitions, coal dust explosions, and respirable coal dust. It is recommended that the Kentucky Coal Mine Research Institute consider a cooperative effort with the Bureau of Mines in conducting detailed studies at several mines in the area, each operating under different conditions, in order to determine what procedures may best be prescribed. These tests would perhaps involve detailed dust sampling, various methods of dust abatement, ventilation considerations and such other tests that might offer a solution to some of the problems that now exist.

It is felt that these studies should be implemented immediately because any unsafe practices should be corrected as soon as possible.

(2) Before requiring mine operators to make costly changes in mine equipment design or operation before the effects of such changes are fully determined in regard to health and safety, it would seem appropriate that such equipment be thoroughly tested to insure that such equipment changes will safely perform the desired function for which it was intended. It is suggested that the Kentucky Coal Mine Research Institute might cooperate with the Bureau of Mines and make available such testing at local mines.

(3) A continuing research project that might prove very beneficial to the coal industry would be an analysis of safety features on mine machinery designed by coal companies or individuals. Reference here is made to innovations that increase safety on machines, but are not to be patented. Several safety features added to mine machinery were observed during this investigation, some of which were not costly and could be added by even small mines if desired. The Kentucky Coal Mine Research Institute would be in a favorable position to distribute these ideas.

(4) Additional Research - There are many research possibilities related to underground mines. However, based on visits into underground coal mines, the writer believes that there is a need for immediate research in the following areas:

(a) Roof Control - The Kentucky Department of Mines and Minerals Annual Report for 1970 indicated that, from 1961 through 1971, about 52 percent of mine fatalities in Kentucky coal mines resulted from the fall of roof, rib and coal. Further, about 42 percent of these falls occurred at the working face.

It was evident from accident reports, however, that a large number of fatalities from roof falls resulted from unsafe work practices. It would seem that training programs outlined in this report would be an important factor in helping to alleviate this problem, as well as actual prevention of roof falls.

(b) Research in Mine Ventilation - The design of ventilation systems is apparently much needed because of changes brought about by the 1969 act. Perhaps the development of the use of auxiliary fans would help in this area. Research in the design and construction of line practices and check curtains is apparently much needed.

(c) Underground Haulage and Material Transport - Haulage accidents are second only to roof falls in Kentucky coal mines. The 1969 act has complicated underground haulage design because of ventilation requirements and research in this area is needed.

(d) Mine Illumination - Several mines visited by the writer were much better illuminated at such critical areas as the working face and loading points. Several coal operators, however, indicated that low coal conditions made portable lighting difficult, especially at the working face. Research in devising acceptable methods of providing adequate illumination under a variety of mining conditions that will not unduly hamper coal production is recommended.

APPARENT DEFICIENCIES IN TRAININGAND ATTITUDES OF MINERS

During this investigation many mine operators appeared to employ well qualified miners. However, interviews with management personnel in some mining areas of eastern Kentucky disclosed that the educational level of miners is often quite low. Many men working in the mines apparently have 6th to 8th grade educations or less. Another problem is that many miners are "drifters" and work only a short time at a particular mine before moving to another mine. Related to this problem is the relatively high absenteeism found in many mines. It is fairly common for some employees to consistently miss one or more days a week. The great danger when this occurs is that another man must substitute for him who may not have enough experience to do that particular job safely.

There apparently exists an important underlying problem commonly expressed by management personnel that is difficult to define. It involves the disinterest shown by many miners for basic economics and the important role they play in the production of coal. Disinterest is also shown in concern for their own safety and well being. Safety classes and chest X-ray programs offered by employers, for example, are often avoided.

CONCLUSIONS

It should be stated that not all miners in the eastern Kentucky area fall in the category of those described above.

However, a significant number do and these attitudes must be considered in any proposed educational programs.

RECOMMENDATIONS

If possible, young men who do not possess an adequate education should be encouraged to increase their education before entering the mining industry. With the increased complexities of modern mining, working miners need a higher education level than that of many present miners.

It is also recommended that the Kentucky Coal Mine Research Institute consider the possibility of some kind of miner certification within the state. Some states, Pennsylvania and West Virginia for example, provide apprentice programs by law whereby apprentice miners work under certified miners until they qualify for certification themselves. This approach insures that the new miner, at least, begins work in the mines under qualified personnel. Perhaps training programs considered by the Kentucky Coal Mine Research Institute would include provisions for certification upon completion.

With the development of programs involving the training of new coal mine personnel, an extensive study of present miners is recommended. This study would be voluntary on the part of the miner and would be of such a nature as to include educational level attained and other background information, basic attitudes and opinions the miner might have toward training he has received. This information might be obtained from the greatest number of men by using questionnaires and

interviews, perhaps supplemented by information from company files.

A study of this kind should be very comprehensive and include large numbers of men because conditions appear to differ greatly from one mining locality to another.

It is further recommended that training programs for new miners should perhaps include the consideration of other topics in addition to mining principles and safety. For example, the basic principles of economics and the miners role in the coal industry may be desirable. Although perhaps extending beyond the aims and purposes of the Kentucky Coal Mine Research Institute, consideration of the miner and his family may have merit. Presently, safety programs in the form of spot television announcements are in use by the U. S. Bureau of Mines in Kentucky and West Virginia. They recognize that the family may cause the miner to consider his safety. The Kentucky Coal Mine Research Institute might apply the same reasoning in programs aimed at helping the miner raise his standard of living.

TRAINING OF MINERS IN HEALTH AND SAFETY

The Federal Coal Mine Health and Safety Act of 1969 requires that coal mine operators must make available a suitable program of first aid training and retraining for employees. Also, every coal mine operator must provide a program of training and retraining of both qualified and certified persons to conduct tests in the mine related to health and safety. These include tests for oxygen deficiency, methane and air flow.

The real problem in coal mine training and retraining in Kentucky is that of reaching many men who are scattered throughout a relatively large area. In 1970, the Kentucky Department of Mines and Minerals reported that approximately 28,000 men were employed in the state in mining activities. As many as 75 percent of these men were employed in small, independent mines which makes the task of training and retraining very difficult.

In order to combat this problem the Kentucky Department of Mines and Minerals has expanded its program of training and mine educational instruction in addition to its inspection duties. Also, some of the larger coal companies in Kentucky have developed excellent health and safety programs. Many of them have classrooms and utilize their own staff as instructors. It should also be noted that some of them assist in health and safety training for miners who are not employed at that mine, but as a service to the area.

The Bureau of Mines, while not engaged in the training of working miners in principles of health and safety directly, has formulated plans to provide training programs for the training of instructors from the industry and to develop educational material to be rented, loaned or sold (depending on type of material) to the operator.

CONCLUSIONS

The Bureau of Mines has stressed that their inspectors have too heavy a load in regular inspection duties to carry on health and safety instruction as well. Also, the Kentucky Department of Mines and Minerals does not have an adequate staff or facilities to provide health and safety training as rapidly as necessary to meet requirements of the 1969 act, even with the development of its expanded training program.

RECOMMENDATIONS

One of the major problems involved in training programs, especially those that (1) require only a short time to complete but must reach every miner and (2) must be repeated or updated as required by law or as technology develops is that of making these programs available to the miner. The larger mines usually have classroom facilities, but the major problem involves the smaller mines. These mines may make use of space available in local schools or other buildings for classes, or conduct classes in makeshift places at the mine. For the benefit of these smaller mines the possibility of the use of mobile training units is recommended. Such units are

presently in use by the Bureau of Mines in mining areas in Virginia and are commonly used in other industries with excellent results. These units are highly recommended for use in Kentucky for the following reasons:

(1) They would provide a self-contained unit which could be designed to make maximum use of audio-visual aids and demonstration materials.

(2) Instructors would not have to improvise in makeshift classrooms.

(3) Scheduling would be simplified and more miners could be reached because the units would be located at or near one or perhaps several mines.

(4) The use of this type of unit would enable coal operators to schedule training and retraining programs for their employees as required by law.

It is recommended that these training units would perhaps coincide very well with the Kentucky Department of Mines and Minerals present training program and perhaps could be scheduled by the state.

OTHER RECOMMENDATIONS

Other recommendations concerning health and safety include:

(1) The Kentucky Coal Mine Research Institute might, through cooperative efforts with the Kentucky Department of Mines and Minerals and the Bureau of Mines, develop an extensive instructor training program. Both of these agencies employ instructors who could be used by the Kentucky Coal

Mine Research Institute to train instructors for the industry. One of the great needs is the training of certified personnel and more instructors would help alleviate this problem.

(2) The Kentucky Coal Mine Research Institute would be in an excellent position to serve as a clearinghouse for educational material pertaining to health and safety in the mines. This would include such material as is presently available or might be developed and offered for use or sale by various private concerns, state and federal agencies, educational institutions, the coal industry or the Kentucky Coal Mine Research Institute. The Institute would also be in a position to analyze, or to provide data from the industry for analysis as to the effectiveness of new or existing educational material and/or programs.

TRAINING OF MINERS IN COAL MINEPRINCIPLES AND SAFETY

Underground coal mining has long been regarded as a dangerous occupation and much adverse public opinion has resulted from mine accidents and disasters, some of which have taken scores of lives. It is not to be denied that underground coal mining puts men in a "hostile environment" and every effort must be made to protect them. During the course of this investigation several facts have become evident concerning the working conditions and training of miners:

(1) Outcries against coal mine operators as being heartless, absentee owners who consider the miner as an expendable item does not appear to hold true in eastern Kentucky. The larger companies usually conduct the most extensive training and safety programs, while in the majority of smaller mines the owner is likely to work underground with his men.

(2) If the safety records of coal companies are studied, it is found that some companies have a much better record than comparable industries. The best safety records appear to be at those companies where extensive safety and job analysis programs are conducted.

(3) Accidents are largely caused by carelessness, disregard for or ignorance of safety rules or the lack of knowledge of how to do a particular job. Accidents may be caused, for example, when a machine operator is absent and a man inexperienced in that job must take his place during a particular shift.

(4) With modern mining techniques, the miner of today needs to be much better trained, not only in mining techniques and safety, but also in regard to mining regulations now in effect. Many miners regard many regulations as foolish and do not take them seriously.

(5) One of the major problems involved in training miners is to determine when and how such training is to be given. Most coal operators feel that it is the miners responsibility to volunteer some time before or after his shift to attend classes. However, miners are usually not receptive to this arrangement.

PRESENT METHOD OF COAL MINE TRAINING

In order to consider improvements in the training of coal miners, it is well to evaluate present training methods. Traditionally, a new man might begin work in a small mine and learn to operate a particular piece of machinery under limited supervision by a co-worker before he is "on his own". He may remain at a smaller mine and receive some safety training through the Kentucky Department of Mines and Minerals instruction program, or he may later be hired by a larger company and receive additional training by that company. This is basically the "learn by doing" method and under ideal conditions with qualified co-workers the results would perhaps be adequate to some extent. However, if a man is instructed in the use of a machine by a man who has unsafe work habits, these habits are likely to be acquired by the trainee. Even with later training these unsafe habits tend to be continued.

Several coal operators have indicated that they would rather hire and train a new man with no coal mining experience than one who had learned by dubious methods.

The point to emphasize in outlining the method of training of a new miner is that, in the majority of cases, training in coal mine principles and safety takes place after a new miner begins work in a producing mine. Without constant supervision in an underground mine one mistake might cost not only the life of the inexperienced miner but also the lives of those around him.

It is readily apparent that men will continue to be injured and killed in mines if they are not adequately trained in mining principles before they enter a producing mine.

CONCLUSIONS

Due to the tremendous projected increase in the production of coal in Kentucky and the Nation and because of the proven effectiveness of extensive health and safety training of new personnel in the coal mining industry where it is practiced, it is believed necessary to consider such training for all miners.

RECOMMENDATIONS

In order to establish an adequate training program aimed at new miners and to perhaps aid in the retraining of experienced miners it is recommended that the Kentucky Coal Mine Research Institute consider the following:

(A) In order to provide initial classroom training, extension classes might be established dealing with general coal mining

principles near coal mine communities. It is recommended that initial programs might be patterned after those in effect in other localities. West Virginia University, for example, has had experience in conducting extension classes of this nature. Morehead State University and other institutions would be in an excellent position to offer guidance and classroom materials. Cooperation with the coal mining industry and the Kentucky Department of Mines and Minerals would be necessary to secure instructors. With the development of initial programs, the Kentucky Coal Mine Research Institute might consider the establishment of a regional training center for permanent classroom facilities.

(B) In addition to classroom instruction, new miners need practical experience. The Kentucky Coal Mine Research Institute would be in a position to work toward devising elaborate methods permitting trainees to learn various mining techniques under controlled conditions. Some possible training aids to be considered include:

(1) Underground mine surface mock-up. A simulated underground mine built on the surface would provide a safe, but realistic means of teaching and learning mining techniques. It is well to note that Pennsylvania is presently considering the use of simulated mines in training programs.

One individual in the mining industry proposed that a possible research project would be to design and construct mock-ups of various mining machines that could simulate actual conditions in the mine. These types of machines are now used

in pilot training programs and driver education programs with apparent success. With the development of these machines actual conditions could be simulated, perhaps on a screen, as well as potential dangers which the student would have to deal with.

(C) As a necessary part of any training program it is felt that actual mining experience under proper supervision in a producing mine is necessary. This part of the training would likely be on a short term basis, possibly four to six weeks, if the trainee has had previous experience in a simulated mine and classroom training.

One way to accomplish this would be to assign trainees to actual mines as apprentices under constant supervision. However, it is recommended that consideration be given to the possibility of the development of a regional training mine by the Kentucky Coal Mine Research Institute. The advantages of such a training mine are as follows:

(1) Consideration could be given to the selection of a mining site with "favorable" mining conditions such as good roof conditions, adequate coal height, etc.

(2) This type of mine would be essentially a non-producing mine so training could be carried out with emphasis on safety and mining techniques. However, such coal as would be produced might be used to help finance the mine.

(3) If desired, trainees could be rotated to several machines or jobs such as shooting, timbering or electrical work in order to gain general mining experience and also to

determine which specialities they might prefer or for which they would be best suited.

(4) The mine would also be available for use in the training of supervisory personnel, instructors, and inspectors.

It is realized that such a mine would have to be operated under proper supervision with an adequate staff of experienced miners and instructors.

In summary, an ultimately developed regional training center designed primarily for the training of new miners, but used also perhaps for retraining purposes, would be advantageous for the following reasons:

(1) A relatively short term but full time training program for new miners would provide a pool of miners for the region who would be trained before going into a producing mine. Safety and production records should be better as a result.

(2) In time initially trained miners should reduce or replace the need for mines to carry on extensive training programs themselves.

(3) This type of training program should attract more and better educated men to the mining industry. These men could also be screened as to their abilities in various mining functions.

(4) A regional training center would provide an outlet for training materials, including those materials developed by the Kentucky Coal Mine Research Institute.

(5) Public relations would be greatly improved as result of "an industry helping itself". Kentucky would undoubtedly become the leader in coal mine training and hopefully coal mine safety.

(6) Properly trained men who become certified to make tests in mines as required by law would greatly assist mine foremen in their duties.

SURFACE MINING IN EASTERN KENTUCKY

During 1970, the Kentucky Department of Mines and Minerals reported that approximately 48 percent of the coal produced in the state was from surface mines. Out of a total of 125,308,395 tons produced, 61,809,368 tons were from surface production and 63,499,027 tons were from underground mines. Also, out of a total of 28,261 persons employed in mines in the state, 7,260 were employed in surface mines and 21,001 in underground mines. Surface mines, then, employed approximately 25 percent of the miners in Kentucky. Surface mining in the state has increased steadily during 1971.

PUBLIC CRITICISM

The increase in surface mining in recent years has been accompanied by an increase in public criticism. Much of this criticism has been justifiable because of irresponsible operators who made little or no effort to reclaim land and the fact that most states have been slow in formulating and enforcing reclamation laws. These practices have resulted in "orphan lands" or surface mined lands that have not been reclaimed. The Kentucky Department of Natural Resources estimates that 40,000 acres of such barren land in western Kentucky and 25,000 acres in eastern Kentucky are in need of restoration by extensive grading and revegetation.

In 1964 Kentucky enacted one of the stronger state laws concerning surface mining and reclamation procedures. However, at present the surface mines are faced with continuing opposition that would either prohibit surface mining

entirely or demand total reclamation of surface mined areas. Those critical of surface mining maintain that reclamation as practiced is not satisfactory and that many of the benefits of surface mining are not practical or are outweighed by such harmful effects as:

- (1) Siltation of streams from stripping operations.
- (2) Stream pollution and the destruction of water wells and natural springs used for water supplies.
- (3) Destruction of timber by surface mining.
- (4) Landslides and slumping on outcrops of spoil banks.
- (5) Unsightly "scars" left by surface mining on hillsides.

Visits to surface mine sites and reclaimed areas in eastern Kentucky during the course of this investigation have shown that many surface mine operators are operating responsibly in meeting or actually exceeding existing reclamation laws. Surface miners argue in favor of surface mining and augering for the following reasons:

- (1) In contour stripping, surface mining produces level benches on otherwise hilly terrain which can be used for housing; industrial sites, agricultural purposes, land fill sites, etc.
- (2) Large amounts of coal lying near the surface can be mined safely only by surface methods.
- (3) Surface mining provides employment in areas where jobs are scarce.
- (4) Recreational areas, lakes and game preserves can be constructed on surface mined sites.

(5) Roads and firebreaks produced by surface mining help to protect existing timber and provide access to fires for fire-fighting equipment.

Presently there are new regulations being imposed at the state and federal levels to further improve surface mining conditions. Water pollution controls regarding acid mine drainage and siltation are being implemented during 1971 as are new regulations by both the Kentucky Department of Mines and Minerals and the U. S. Department of the Interior concerning health and safety practices in surface mines.

It should be emphasized that many responsible surface mine operators in Kentucky are conducting testing and research programs of their own aimed at developing better reclamation techniques and land use potential.

CONCLUSIONS

As is the case with underground mines, surface mines are presently in a confusing transition period. It is probable that surface mines will experience even greater difficulty in regard to the training of certified personnel than underground mines because many federal regulations are new to surface mines, such as methane and oxygen deficiency tests. Many coal operators also stated that they were unsure of the necessary qualifications for surface mine foremen.

RECOMMENDATIONS

With the continuing increase in surface mining and with the ever increasing need for reclamation of surface mine sites,

it seems appropriate to consider the following training programs:

(1) Surface mine foremen - At the present time Kentucky has no specific training program for surface mine foremen. The Kentucky Coal Mine Research Institute might consider the development of such programs in cooperation with the Kentucky Department of Mines and Minerals. Such programs would be of special benefit if they included satisfaction of requirements for certification under federal regulations. Elements of reclamation, the use of explosives and other subjects pertinent to surface mines would be appropriate.

(2) Surface miners and equipment operators - The Kentucky Coal Mine Research Institute might also consider training programs for surface miners because similar deficiencies are found in relation to underground mines. Accident reports, for example, show that new or inexperienced heavy equipment operators and other personnel are often involved in accidents. Programs might include not only the proper operation of heavy equipment, drills, augers, etc., but also elements of reclamation and health and safety principles.

Should the Institute consider the development of a regional training center for underground miners, the development of programs for surface miners at that facility is recommended.

POSSIBLE RESEARCH PROJECTS IN SURFACE MINES

TREATMENT OF MINE WATER

A research project applicable to both surface and underground mines involves the treatment of mine water. Preparation plants and coal washers have problems in the control of "black water". Also, methods to control dissolved solids and the pH of mine water drainage is needed, especially in areas where acid conditions are present.

PRE-PLANNING OF SURFACE MINE SITES

It would seem that in many cases surface mining could be carried out with more regard for future land use before actual mining has begun. This is presently done, for example, in the planning of water retention in strip pits for lakes. Perhaps the Kentucky Coal Mine Research Institute could, within the framework of reclamation regulations, act in an advisory capacity between future land developers and surface mine operators in developing surface mine sites. In this way, perhaps some of the conflicts of interest and objections to surface mining might be overcome.

USES OF SURFACE MINE SITES

In regard to future land use of surface mine sites, many experimental programs have been initiated such as orchards, greenhouses, vegetable gardens and poultry farms. The Kentucky Coal Mine Research Institute might consider these projects as research possibilities. Another problem concerning lakes and recreational areas developed on mined sites involves not only the construction of these areas, but their

future management as well. One of the major criticisms aimed at the mining industry in eastern Kentucky involves lakes that are polluted and recreational facilities vandalized after their construction. It is likely that studies involving the future management and maintenance of such recreational areas would go far in producing a better image for the industry.

OTHER RESEARCH POSSIBILITIES

Although many of the basic problems involving revegetation, surface erosion, control of landslides and stream pollution have been solved to some extent, more research in these areas is recommended as reclamation procedures become more complex.

POSSIBLE PUBLICATIONS FOR THE
KENTUCKY COAL MINE RESEARCH INSTITUTE

The Kentucky Coal Mine Research Institute would have at its disposal within the state a wide spectrum of talent and resources needed for the drafting and publication of literature useful to the mining industry. The types of publications needed at present might be divided into two categories, educational and informational.

EDUCATIONAL PUBLICATIONS

Publications of an educational nature would include those developed by the Kentucky Department of Mines and Minerals for the training of mine employees, supervisors, inspectors and operators. However, especially with the passage of the 1969 act, these publications need to be revised and updated to include new information and regulations.

In addition, any publications developed for use in special training programs initiated and conducted by the Kentucky Coal Mine Research Institute would be especially valuable because they could be analyzed as to their effectiveness under controlled classroom conditions. The development of correspondence courses might prove effective for some training courses. Correspondence courses might serve to cover certain subject matter areas entirely, or perhaps to significantly reduce the classroom time necessary to present certain courses.

INFORMATION PUBLICATIONS

The Kentucky Department of Mines and Minerals now provides a monthly bulletin with general mine information, statistics

and accident reports. However, these reports are not directed at the working miner. Discussions with mine operators and especially miners themselves have indicated a need for a general publication in "easy to read" form to be sent to the miner. This publication would include general mining news with accident prevention information the miner might find useful in relation to his particular job.

Another type of informational material might be in the form of a manual, prepared in cooperation with the U. S. Bureau of Mines that consists of a digest of the 1969 act and subsequent amendments. Several coal operators have indicated that confusion exists in regard to the interpretation of various parts of the act and such a manual may prove valuable.

SUMMARY

During this investigation it became evident that Kentucky has a tremendous potential for supplying coal to the Nation. However, the coal industry in Kentucky has been deficient in providing necessary training and research for the miner's safety. This is not to criticize those who are charged with this responsibility, because evidence seems clear that the major reasons for this failing may be found in the lack of personnel and a unified effort to carry on adequate programs. It would seem that the founding of the Kentucky Coal Mine Research Institute would be a major step forward in the unification of agencies and institutions in Kentucky in achieving safe mining practices.

TENNESSEE VALLEY AUTHORITY,
Knockville, Tenn., November 12, 1971.

HON. JOHN SHERMAN COOPER,
The United States Senate,
Washington, D.C.

DEAR SENATOR COOPER: This is in response to your request for information concerning TVA's procurement of surface-mined coal in the operation of its power system.

Of the total of about 603 million tons of bituminous coal produced in the United States in calendar year 1970, approximately 264 million tons (44%) were produced through surface methods. Of TVA's total receipts of 33.6 million tons for the same year, approximately 18 million tons (53%) came from surface mines. TVA's share of the total surface mine production in the country was 6.8%.

We began including reclamation requirements in our term contracts for surface-mined coal in 1965 after it became apparent that the states from which we obtain our coal were not moving promptly enough to enact effective legislation for the control of surface mining. Our reclamation requirements have been revised and strengthened from time to time as the need became evident and reclamation technology improved. We are enclosing a copy of the 1970 version of these requirements which is currently being included in our contracts. We now are considering a further revision of these requirements and we will send you a copy when they have been adopted.

We are also enclosing a tabulation which shows the number (by mining areas) of coal contracts in which the reclamation requirements have been included between 1965 and July 1, 1971. The tabulation shows that of the total of 14,340 acres that have been disturbed through calendar year 1970 in producing coal for these contracts, 10,710 acres have been revegetated. Revegetation of the balance is in progress. For the next several years we anticipate that about 4,000 acres will be disturbed annually and that about the same number of acres will be reclaimed.

Compliance with our reclamation requirements, on the whole, has been good. Of course, there have been instances in which our people involved in the administration of the contracts have had to require the contractor to improve the reclamation work where it did not fully comply with the contract. In practically all cases, the contractors have come through and carried out their obligations in this respect. Where they have failed to comply with the contract we have taken action against them. For example, in three cases we have had to suspend deliveries because of failure to comply with the reclamation requirements. Also, last year we terminated a contract when we found the contractor was mining the coal near the Obed River in Tennessee which has been designated for study for possible addition to the Scenic Rivers System. It is our policy to avoid purchase of coal surface-mined in such areas.

We have been encouraging and supporting state legislation for the effective regulation of surface mining since about 1960. As you know, Kentucky was fairly early in adopting such legislation and has improved its law on two or three occasions since. Consideration is presently being given to further improvements, and in this connection we are enclosing two statements (one by me and one by J. A. Curry, a TVA staff member) which have been prepared for delivery to a subcommittee of the Kentucky Assembly. We have worked closely with officials in Tennessee and Alabama in trying to get effective legislation passed, and I have made two appearances before a Tennessee legislative committee for that purpose. While both states have passed surface mine control laws, both are in need of strengthening. We are optimistic about the adoption of such improved legislation in the next sessions of the respective legislatures.

While we continue to feel that principal responsibility for regulation of surface mining should rest in the states, we recognize that because of the failure of some of the states to impose effective controls it is necessary for the federal government to get into the picture. We favor legislation which would prescribe federal standards for surface mining and reclamation of the disturbed areas and would permit the states to apply and enforce such standards if they show they can and are willing to do an effective job. We also believe federal legislation on the subject should provide for federal assistance, both technical and financial, in obtaining reclamation of the "orphan" lands which were disturbed before legal requirements for reclamation were imposed. We have expressed these views

in reports on pending federal legislation and in my recent appearance before a House subcommittee.

We hope this is the information you desire, and that you will let us know if you need anything further.

Sincerely yours,

AUBREY J. WAGNER,
Chairman, Board of Directors.

Enclosures.

TVA TERM COAL CONTRACT RECLAMATION PROVISIONS—AS REVISED
DECEMBER 1970

Contractor agrees to perform in accordance with the following standards and to the satisfaction of TVA reclamation and conservation work upon all lands which are affected by the strip mining (including surface auger) of any coal supplied under this contract.

a. Contractor shall, as closely as practicable following the mining operation, cover coal faces and bury all toxic materials including coal wastes and strongly acid shales.

b. Contractor shall seal off any breakthrough to former underground mines.

c. Contractor shall conduct the mining in such a manner as to keep the drainage free of spoil. This will include no mining activities (except building roadways) within 100 feet of any stream channel.

d. Contractor shall control water from the mines and haul roads by:

(1) Channeling runoff into drainages either naturally non-eroding or made that way through construction of checks, or

(2) By impoundments, or

(3) A combination of (1) and (2).

e. Contractor shall cover all holes at the face that have been made by augers.

f. Contractor shall grade the spoil banks as necessary to provide for the reestablishment of approved vegetation and to improve the general appearance of the mine area.

g. Contractor shall conduct mining and reclamation so that any spoil placed on the slope below the bench will be handled with the objective of preventing landslides. This provision will require that all organic material in the proposed cut and fill sections be removed and windrowed just below the calculated toe of the fill material. It will also control the bench width of the first cut in relation to the steepness of slope as follows:

28°+	-----	No surface mining
26.1°-28°	-----	80'
24.1°-26°	-----	105'
22.1°-24°	-----	125'
20.1°-22°	-----	145'
18.1°-20°	-----	165'
0°-18°	-----	No restrictions

In special instances where slope reduction is permitted, the bench widths may be exceeded as determined by TVA.

No materials from second or subsequent mine cuts will be placed anywhere on outer one-third of the fill bench created by first mine cut.

h. Contractor shall seed, mulch, and fertilize by hydroseeder all spoil material on all out slopes and other critical areas as determined by TVA within one week of final placement. All other areas will be seeded and fertilized on the same schedule. Immediate reseeded, mulching, and refertilization will be required in case of all failures. During first winter planting season, deep-rooted trees and wildlife food and cover plants will be planted on all out slopes and other areas designated by TVA and consistent with long-range surface management objectives.

i. As needed to help control siltation, Contractor shall construct small silt basins in drainage channels below mining operations as required by TVA.

j. To the maximum extent practicable, the foregoing work shall be performed at the same time the mining operation is taking place, and all the above work shall be completed no later than 24 months after delivery of all the coal supplied under this contract, unless TVA agrees to a longer period of time.

TVA shall have the right to inspect the Contractor's mining operation and the lands involved from time to time to determine the Contractor's compliance with the foregoing standards. TVA shall at all times be the sole judge as to whether Contractor is complying with the standards above set out. TVA, in its discretion, may accept as fulfillment of the requirements of this contract compliance by the Contractor with applicable reclamation laws having standards comparable to the foregoing.

TVA COAL CONTRACTS WITH RECLAMATION PROVISIONS, 1965 TO JULY 1, 1971

	Tennes- see	Kentucky (eastern)	Kentucky (western)	Vir- ginia	Ala- bama	Illinois	Indi- ana	Okla- homa	Total
Contracts awarded.....	132	21	74	13	5	2	1	1	249
Acres eventually to be mined and reclaimed.....	15,450	9,330	15,500	410	7,000	2,300	20	250	50,260
Acres disturbed through De- cember 1970.....	5,610	2,610	4,290	220	1,440	150	20	0	14,340
Acres revegetated.....	4,380	1,970	3,240	200	850	90	10	-----	10,710
Contracts on which deliveries completed but reclamation incomplete ¹	84	15	50	12	3	0	1	-----	165
Contracts released—deliveries and reclamation complete....	19	0	7	0	0	0	0	-----	26
Acres in released contracts.....	790	0	170	0	0	0	0	-----	960

¹ These contract areas are now being reviewed to determine if grass and/or tree survival rates are sufficient to permit release. Approximately 7,100 acres are included in these inactive contracts. This figure includes some areas where reclamation cannot be completed at present because additional cuts will be made adjacent to the mined areas under a new contract.

1966

CHAPTER 350

**Kentucky Revised Statutes
Relating To
Strip Mining And Reclamation**



COMMISSION MEMBERS

CHAIRMAN: J. O. Matlick
Commissioner of Natural
Resources

MEMBER: Ambrose Mandt
Commissioner of Mines and
Minerals

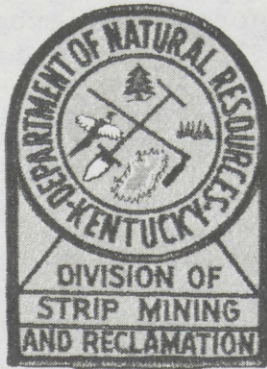
MEMBER: Elmore C. Grim
Director, Division of
Reclamation

**DIVISION OF RECLAMATION
DEPARTMENT OF NATURAL RESOURCES
Frankfort, Kentucky 40601**

**DEPARTMENT OF NATURAL
RESOURCES**

J. O. MATLICK
Commissioner

**DIVISION OF
RECLAMATION**



ELMORE C. GRIM
Director

For Information Only

CHAPTER 350

STRIP MINING

- 350.010 Definitions
- 350.020 Declaration of legislative policy and finding of fact
- 350.024 Reclamation Commission; membership; meetings; compensation
- 350.026 Transfer of records, property, personnel, funds
- 350.028 Powers of Commission
- 350.029 Regulations, to implement interstate mining compact, adoptions, limitations
- 350.032 Enforcement of subpoenas; judicial review of final orders
- 350.035 Director of Division of Reclamation; appointment
- 350.050 Powers of Division
- 350.060 Permit required; contents of application; map; fee; bond
- 350.070 Procedure for increase or decrease of acreage affected by permit
- 350.080 Procedure for obtaining approval of other mining operations; reclamation may be deferred
- 350.085 Permits, denial authorized when; deletions of areas of land; distance limits for strip mining
- 350.090 Reclamation plan, requirements, approval; dumping regulations
- 350.093 Backfilling and grading requirements; alternative water impoundments; bond released, when
- 350.095 Vegetative cover requirements
- 350.100 Time for commencement and completion of reclamation; deferred planting; authority to plant different area
- 350.110 Partial release of bond when planting deferred; payment in lieu of forfeiture
- 350.113 Planting reports, requirement,

- 350.117 contents, inspection, approval
Trees, shrubs and plants, owner-
ship
- 350.120 Report on expiration of permit,
contents
- 350.130 Suspension of permit; bond forfei-
ture; denial of future permits for
noncompliance
- 350.135 Succession of one operator by an-
other at uncompleted project
- 350.140 Strip Mining and Reclamation fund
- 350.150 Reclamation work by Division;
procedure; acceptance of federal
and other funds; access to land
- 350.152 Acquisition of land by Common-
wealth for reclamation purposes
- 350.154 Restoration and reclamation by
Division of Reclamation
- 350.156 Restored land, transfer to state
or local agencies
- 350.158 Land under bond for restoration
not to be acquired
- 350.161 Acquisition and disposals of land,
how governed
- 350.163 Division may accept state and fed-
eral funds; Reclamation Fund
created
- 350.170 Construction of Chapter
- 350.185 Advisory Committees
- 350.200 Signs to be posted at mining site,
size, contents
- 350.210 Monuments marking permit areas
- 350.220 Use of explosives, regulation
- 350.230 Conformance to statutes and regu-
lations required, when
- 350.240 Clay mining regulations
- 350.250 Citizen's complaints of violation;
mandamus against officers
- 350.300 Interstate Mining Compact enacted
- 350.310 Mining Council, creation, mem-
bers, term
- 350.320 Bylaws of Interstate Mining Com-
mission, where filed
- 350.990 Penalties

350.010 DEFINITIONS. (1) "Strip Mining" means all or any part of the process followed in the production of coal by the open pit or open cut method, the auger method, high wall mining method which requires a new cut or removal of overburden, or any other mining method or process in which the strata or overburden is removed or displaced in order to recover the coal, or in which the overburden is removed for the purpose of determining the location, quality or quantity of a natural coal deposit.

(2) "Overburden" means all of the earth and other materials which lie above a natural deposit of coal and also means such earth and other material after removal from their natural state in the process of strip mining;

(3) "Area of land affected" means the area of land from which overburden is to be or has been removed and upon which the overburden is to be or has been deposited, and shall include all lands affected by the construction of new roads or the improvement or use of existing roads other than public roads, to gain access and to haul coal;

(4) "Operation means all of the premises, facilities, roads and equipment used in the process of producing coal from a designated strip mine area or removing overburden for the purpose of determining the location, quality or quantity of a natural coal deposit;

(5) "Method of operation" means the method or manner by which the cut or open pit is made, the overburden is placed or handled, water is controlled and other acts are performed by the operator in the process of uncovering and removing the coal;

(6) "Operator" means any person, partnership or corporation engaged in strip min-

ing who removes or intends to remove more than one hundred tons of coal from the earth by strip mining within twelve successive calendar months or who removes overburden for the purpose of determining the location, quality or quantity of a natural coal deposit ;

(7) "Person" means persons, partnership or corporation;

(8) "Division" means the Division of Reclamation;

(9) "Director" means the Director of the Division of Reclamation of the Department of Natural Resources;

(10) "Commission" means the Reclamation Commission;

(11) "Reclamation" means the reconditioning of the area of land affected by strip mining under a plan approved by the division;

(12) "Degree" when used in this chapter shall mean from the horizontal, and in each case shall be subject to a tolerance of five percent of error;

(13) "Bench" means the ledge, shelf or terrace formed in the contour method of strip mining;

(14) "Fill bench" means that portion of the bench which is formed by depositing overburden beyond the cut section.

350.020 DECLARATION OF LEGISLATIVE POLICY AND FINDING OF FACT. The General Assembly finds that the unregulated strip mining of coal causes soil erosion, damage from rolling stones and overburden, landslides, stream pollution, the accumulation of stagnant water and the seepage of contaminated water, increases the likelihood of floods, destroys the value of land for agricultural purposes, destroys aesthetic values, counteracts efforts for the conservation of soil, water and other natural

resources, destroys or impairs the property rights of citizens, creates fire hazards, and in general creates hazards dangerous to life and property, so as to constitute an imminent and inordinate peril to the welfare of the Commonwealth. The General Assembly further finds that lands that have been subjected to strip mining and have not been reclaimed and rehabilitated in accordance with modern standards constitute the aforementioned perils to the welfare of the Commonwealth. The General Assembly further finds that there are wide variations in the circumstances and conditions surrounding and arising out of the strip mining of coal due primarily to difference in topographical and geological conditions, and by reason thereof it is necessary, in order to provide the most effective, beneficial and equitable solution to the problem, that a broad discretion be vested in the authority designated to administer and enforce the regulatory provisions enacted by the General Assembly. Therefore, it is the purpose of this chapter to provide such regulation and control of the strip mining of coal as to minimize or prevent its injurious effects on the people and resources of the Commonwealth. To that end, the Division and Commission are directed to rigidly enforce this chapter and to adopt whatever regulations are found necessary to accomplish the purpose of this chapter.

**350.024 RECLAMATION COMMISSION;
MEMBERSHIP; MEETINGS; COMPENSATION.**
There is hereby created in the Department of Natural Resources a Reclamation Commission, which shall be composed of the Commissioner of Natural Resources, serving as chairman, the Commissioner of Mines and Minerals, and the Director of Reclamation. The members of the Commission,

other than the Director of Reclamation, shall receive no compensation for their services on the Commission, but shall be reimbursed for their expenses incurred in performing their functions. The Commission shall meet from time to time on the call of any member, but shall meet at least four times each year.

350.026 TRANSFER OF RECORDS, PROPERTY, PERSONNEL, FUNDS. The records, property, personnel, any unexpended appropriation balances and trust and agency funds maintained for carrying out the functions of the Department of Conservation in the field of strip mining and reclamation as provided in KRS Chapter 350, are hereby transferred to the Strip Mining and Reclamation Commission.

350.028 POWERS OF COMMISSION. The Reclamation Commission shall have and exercise the following authority and powers:

(1) To adopt, after giving notice to all operators actively engaged in strip mining and affording them an opportunity to appear and offer evidence at a public hearing, general rules and regulations pertaining to strip mining to accomplish the purposes of this chapter;

(2) To adopt, without hearings, rules and regulations with respect to procedural aspects of Commission hearings;

(3) To conduct hearings under provisions of this chapter or regulations adopted by the Commission and for the purpose of any investigation or hearing, the Commission or any member thereof may administer oaths or affirmations, subpoena witnesses, compel their attendance, take evidence and require production of any books, papers, corre-

spondence, memoranda, agreements or other documents or records which the Commission deems relevant or material to the inquiry;

(4) To issue after hearing, orders requiring an operator to adopt such remedial measures as are necessary to comply with this chapter and regulations adopted pursuant thereto;

(5) To issue after a hearing, a final order directing the Division to revoke a permit, when the requirements set forth by the notice of non-compliance, order of suspension, or an order of the Commission requiring remedial measures have not been complied with according to the terms therein.

350.029 REGULATIONS, TO IMPLEMENT INTERSTATE MINING COMPACT, ADOPTIONS, LIMITATIONS. The Reclamation Commission is hereby authorized and empowered to adopt, after public hearing, reasonable regulations in order to formulate and establish effective programs for the control of surface disturbance in connection with mining as defined by the Interstate Mining Compact. Such regulations shall follow the general standards established in Article III of the Interstate Mining Compact. The Reclamation Commission shall have the authority to adopt such regulations prior to the effective date of the Interstate Mining Compact and irrespective of whether the State becomes a member or withdraws from membership in the Interstate Mining Compact. Nothing in this section shall be construed to grant the Reclamation Commission additional authority in regulating the strip mining of coal or clay, and the authority granted to the Reclamation Commission by this section shall be separate from the powers of the Commission already enacted relating to the strip mining of coal and clay.

350.032 ENFORCEMENT OF SUBPOENAS: JUDICIAL REVIEW OF FINAL ORDERS.

(1) In case of refusal to obey a subpoena issued to any person, the Franklin Circuit Court, upon application by the Commission, may issue to the person an order requiring him to appear before the Commission, there to produce documentary evidence if so ordered or to give evidence touching the matter under investigation or in question; and any failure to obey the order of the court may be punished by the court as a contempt of court.

(2) Any person aggrieved by a final order of the Commission may obtain a review of the order by filing in the Franklin Circuit Court, within sixty days after the entry of the order, a written petition praying that the order be modified or set aside in whole or in part. A copy of the petition shall be forthwith served upon the Commission, and thereupon the Commission shall certify and file in court a copy of the record before the Commission, including therein all pleadings, orders, documentary exhibits and the stenographic transcript of the testimony taken before the Commission. When these have been filed, the court shall have exclusive jurisdiction to affirm, modify, enforce or set aside the order, in whole or in part. No objection to the order may be considered by the court unless it was urged before the Commission or there were reasonable grounds for failure to do so. The findings of the Commission as to the facts, if supported by substantial evidence, are conclusive. If either party applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the additional evidence is material and that there were reasonable grounds for failure to adduce the

evidence in the hearings before the Commission, the court may order that additional evidence be taken before the Commission in such manner and upon such condition as the court may consider proper. The Commission may modify its findings as to the facts, by reason of the additional evidence so taken; and it shall file any modified or new findings with the court, which if supported by substantial evidence shall be conclusive, and any recommendation for the modification or setting aside of the original order. The commencement of the proceedings under this section does not, unless specifically ordered by the court, operate as a stay of the Commission's order. An appeal may be taken from the judgement of the Franklin Circuit Court to the Court of Appeals on the same terms and conditions as an appeal is taken in any civil action.

350.035 DIRECTOR OF DIVISION OF RECLAMATION: APPOINTMENT. The Director of the Division of reclamation shall be appointed by the Commissioner of Natural Resources in accordance with KRS 12.050.

350.050 POWERS OF DIVISION. The Division of Reclamation of the Department of Natural Resources under the supervision of the Commissioner of Natural Resources shall have and exercise the following authority and powers:

(1) To exercise general supervision and administration and enforcement of this chapter and all rules and regulations and orders promulgated thereunder;

(2) To encourage and conduct investigations, research, experiments and demonstrations, and to collect and disseminate information relating to strip mining and reclama-

tion of lands and waters affected by strip mining;

(3) To adopt, without hearing, rules and regulations with respect to the filing or reports, the issuance of permits and other matters of procedure and administration;

(4) To examine and pass upon all plans and specifications submitted by the operator for the method of operation, backfilling, grading and for the reclamation of the area of land affected by his operation;

(5) To make investigations or inspections which may be deemed necessary to insure compliance with any provision of this chapter;

(6) To order, through personnel of the Division, the suspension of any permit for failure to comply with any of the provisions of this chapter or any regulations adopted pursuant thereto;

(7) To order, through personnel of the Division, the stopping of any operation that is started without first having secured a permit as required by this chapter.

350.060 PERMIT REQUIRED; CONTENTS OF APPLICATION; MAP; FEE; BOND.

(1) No operator shall engage in strip mining without having first obtained from the Division a permit designating the area of land affected by the operation. The permit shall authorize the operator to engage in strip mining upon the area of land described in his application for a period of one year from the date of its issuance;

(2) An operator desiring a permit shall file an application which shall state:

(a) The location and area of land to be affected by the operation, with a description of access to the area from the nearest public highways;

(b) The owner or owners of the surface of the area of land to be affected by the permit and the owner or owners of all surface area within five hundred feet of any part of the affected area;

(c) The owner or owners of the coal, to be mined;

(d) The source of the applicant's legal right to mine the coal on the land affected by the permit;

(e) The permanent and temporary post office addresses of the applicant;

(f) Whether the applicant or any person, partnership or corporation associated with the applicant holds or has held any other permits under this chapter, and an identification of such permits;

(g) Whether or not the applicant is in compliance with subsection (3) of KRS 350.130 and whether or not every officer, partner, director or any individual owning of record or beneficially (alone or with associates) if known, ten percent or more of any class of stock of the applicant, is subject to any of the provisions of subsection (3) of KRS 350.130 and he shall so certify;

(3) The application for a permit shall be accompanied by two copies of a United States Geological Survey topographic map on which the operator has indicated the location of the operation, the course which would be taken by drainage from the operation to the stream or streams to which such drainage would normally flow, the name of the applicant and date, and the name of the person who located the operation on the map;

(4) The application for a permit shall be accompanied by two copies of an enlarged United States Geological Survey topographic map meeting the requirements of the subsections below. The map shall:

(a) Be prepared and certified by a professional engineer, registered under the provisions of KRS Chapter 322. The certification shall be in the form as provided in subsection (5) below;

(b) Identify the area to correspond with the application;

(c) Show adjacent deep mining and the boundaries of surface properties and names of owners on the affected area and within five hundred feet of any part of the affected area;

(d) Be of a scale of not less than four hundred feet to the inch and not to exceed six hundred and sixty feet to the inch;

(e) Show the names and locations of all streams, creeks, or other bodies of public water, roads, buildings, cemeteries, oil and gas wells, and utility lines on the area of land affected and within five hundred feet of such area;

(f) Show by appropriate markings the boundaries of the area of land affected, the cropline of the seam or deposit of coal to be mined, and the total number of acres involved in the area of land affected;

(g) Show the date on which the map was prepared, the north point and the quadrangle name;

(h) Show the drainage plan on and away from the area of land affected. Such plan shall indicate the directional flow of water, constructed drainways, natural waterways used for drainage, and the streams or tributaries receiving the discharge;

(5) The certification of the maps by the professional engineer shall read as follows: "I, the undersigned, hereby certify that this map is correct, and shows to the best of my knowledge and belief all the information required by the strip mining laws of this state."

The certification shall be signed and notarized. The Division may reject any map as incomplete if its accuracy is not so attested;

(6) In addition to the information and maps required above, each application for a permit shall be accompanied by detailed plans or proposals showing the method of operation, the manner, time and distance for backfilling, grading work and a reclamation plan for the affected area, which proposals shall meet the requirements of this chapter and rules and regulations adopted pursuant thereto;

(7) A basic fee of fifty dollars plus twenty-five dollars for each acre or fraction thereof of the area of land to be affected by the operation shall be paid before the permit required herein shall be issued. The operator shall file with the Division a bond payable to the Commonwealth of Kentucky with surety satisfactory to the Division in the penal sum to be determined by the Commission on the recommendation of the Director of not less than one hundred dollars nor more than five hundred dollars for each acre or fraction thereof of the area of land affected, with a minimum bond of two thousand dollars, conditioned upon the faithful performance of the requirements set forth in this chapter and of the rules and regulations of the Commission. In determining the amount of the bond within the above limits, the Commission shall take into consideration the character and nature of the overburden, the future suitable use of the land involved and the cost of backfilling, grading and reclamation to be required. In a particular instance where the circumstances are such as to warrant an exception, the Commission, in its discretion, may reduce the amount of the bond for a particular operation to less than the required minimum.

350.070 PROCEDURE FOR INCREASE OR DECREASE OF ACREAGE AFFECTED BY PERMIT. The Division may increase or reduce the area of land affected by an operation under a permit on application by an operator, but an increase shall not extend the period for which an original permit was issued. An operator may, at any time within one year from the date of issuance of the permit, apply to the Division for an amendment of the permit so as to increase or reduce the acreage affected by it. The operator shall file an application and map in the same form and with the same content as required for an original application under this chapter and shall pay a basic fee of fifty dollars, plus a fee of twenty-five dollars for each acre or fraction of acre for the increase requested, and shall file with the Division a supplemental bond in the amount to be determined under the provisions of KRS 350.060 for each acre or fraction of an acre of the increase approved. If the Division approves a reduction in the acreage covered by the original or supplemental permit, it shall release the bond for each acre reduced, but in no case shall the bond be reduced below two thousand dollars, except as provided in subsection (7) of KRS 350.060. If the Division approves a reduction in acreage covered by the original or supplemental permit, it shall transfer the acreage fee for each acre reduced to acreage fees in subsequent permit applications by the operator.

350.080 PROCEDURE FOR OBTAINING APPROVAL OF OTHER MINING OPERATIONS; RECLAMATION MAY BE DEFERRED. An operator may conduct other mining operations from premises covered by a strip mining permit with approval of the Commission, subject to the provisions of KRS Chapter

351 and 352. In applying to the Commission for such approval, he shall furnish the Commission with a revised copy of the map of the area on which his permit was based on which he shall designate other mining locations, the location of outside haulage-ways and other parts of the area necessary to the conduct of other mining operations. The Commission may authorize the operator to defer the reclamation of the area covered by such operations during such time as other bona fide mining operations are carried out. The bond covering that area shall remain in effect until reclamation of it has been completed by the operator under a plan approved by the Commission.

350.085 PERMITS, DENIAL AUTHORIZED WHEN; DELETIONS OF AREAS OF LAND; DISTANCE LIMITS FOR STRIP MINING.

(1) No application for a permit shall be approved by the Division if there is found on the basis of the information set forth in the application that the requirements of this Chapter or regulations will not be observed or that there is not probable cause to believe that the proposed method of operation, back-filling, grading or reclamation of the affected area can be carried out consistent with the purpose of this Chapter;

(2) If the Division finds that the overburden on any part of the area of land described in the application for a permit is such that experience in the Commonwealth with a similar type of operation upon land with similar overburden shows that substantial deposition of sediment in stream beds, landslides, or acid water pollution cannot feasibly be prevented, the Division may delete such part of the land described in the application upon which such overburden exists;

(3) If the Division finds that the operation will constitute a hazard to a dwelling house, public building, school, church, cemetery, commercial or institutional building, public road, stream, lake or other public property, the Division shall delete such areas from the permit application before it can be approved;

(4) The Division shall not give approval to strip mine any area which is within one hundred feet of any public road, stream, lake or other public property and shall not approve the application for a permit where the strip mining operation will adversely affect a state, national or interstate park unless adequate screening and other measures as approved by the Commission are incorporated into the permit application.

350.090 RECLAMATION PLAN, REQUIREMENTS, APPROVAL; DUMPING REGULATIONS. (1) Under the provisions of this chapter and regulations adopted by the Commission, an operator shall prepare and carry out a method of operation, plan of grading and backfilling and a reclamation plan for the area of land affected by his operation. In developing a method of operation, and the plans of backfilling, grading and reclamation, all measures shall be taken to eliminate damages to members of the public, their real and personal property, public roads, streams and all other public property from soil erosion, rolling stones and overburden, water pollution and hazards dangerous to life and property. The plan shall be submitted to the Division and the Division shall notify the applicant by registered mail within twenty working days after receipt of the plans and complete application if it is or is not acceptable. If the plan is not acceptable, the Division shall set forth the reasons for which the plan is not acceptable and it may propose modifications,

delete areas or reject the entire plan. Should the applicant disagree with the decision of the Division, he may, by written notice, request a hearing by the Commission. The Commission shall notify the applicant by registered mail within twenty days after the hearing of its decision. Any person aggrieved by a final order of the Commission may appeal through the courts as set forth in KRS 350.032;

(2) In addition to the method of operation, grading, backfilling and reclamation requirements of this chapter and regulations adopted pursuant thereto, the operator, consistent with the directives of subsection (1) above, shall be required to perform the following:

(a) Cover the face of the coal with compacted non-acid bearing and non-toxic materials to a distance of at least four feet above the seam being strip mined or by a permanent water impoundment;

(b) Bury under adequate fill all toxic materials, roof coal, pyritic coal or shale determined by the Division to be acid producing, toxic, or creating a fire hazard;

(c) Seal off, as directed by regulations, any break through of acid water creating a hazard;

(d) Impound, drain or treat all runoff water so as to reduce soil erosion, damage to agricultural lands and pollution of streams and other waters;

(e) Remove or bury all metal, lumber, and other refuse resulting from the operation;

(3) No operator shall throw, dump, pile or permit the dumping, piling or throwing or otherwise placing any overburden, stones, rocks, coal, particles of coal, earth, soil, dirt, debris, trees, wood, logs or any other materials or substances of any kind or nature

beyond or outside of the area of land which is under permit and for which bond has been posted under KRS 350.060 or place such materials herein described in such a way that normal erosion or slides brought about by natural physical causes will permit such materials to go beyond or outside of the area of land which is under permit and for which bond has been posted under KRS 350.060.

350.093 BACKFILLING AND GRADING REQUIREMENTS; ALTERNATIVE WATER IMPOUNDMENTS; BOND RELEASED, WHEN.

(1) On lands where the method of operation does not produce a bench (area strip mining), complete backfilling shall be required, beginning at or beyond the top of the highwall and sloped to the toe of the spoil bank at a maximum angle not to exceed the approximate original contour of the land with no depressions to accumulate water. Such backfilling shall eliminate all highwalls and spoil peaks. Whenever directed by the Division, the operator shall construct in the final grading, such diversion ditches or terraces as will control the water runoff on long uninterrupted slopes. Additional restoration work may be required by the Division according to regulations adopted by the Commission;

(2) On lands where the method of operation produces a bench (contour strip mining), terrace backfilling shall be required and performed as follows:

(a) All highwalls must be reduced or backfilled. The steepest slope of the reduced or backfilled highwall and of the outer slope of the fill bench shall be no greater than forty-five degrees from the horizontal; provided however, if the highwall is composed of solid rock and sufficient soil is not available to backfill or cover the solid rock suitable to establish vegetative cover, the Com-

mission, by regulation, may make modifications to the requirements of this section;

(b) The table portion of the restored area shall be a terrace with a slope toward the reduced highwall of not greater than ten degrees;

(c) The restored area shall have a minimum depth of four feet of fill over the floor of the pit from which the coal has been removed;

(d) There shall be no depressions to accumulate water but lateral drainage ditches connecting to natural or constructed waterways shall be constructed whenever directed by the Division;

(e) Additional restoration work may be required by the Division according to regulations adopted by the Commission;

(f) In addition to the backfilling and grading requirements above, the operator's method of operation on steep slopes may be regulated and controlled according to regulations adopted by the Commission. Such regulations may limit bench widths, control the amount of overburden to be placed beyond the solid bench, prohibit any overburden from being placed beyond the solid bench on precipitous slopes as defined by the Commission, or require any measure whatsoever to accomplish the purpose of this chapter.

(3) An operator may propose alternative plans other than backfilling where a water impoundment is desired, if such restoration will be consistent with the purpose of this chapter. Such plans are to be submitted to the Division, and if such plans are approved by the Reclamation Commission and complied with within the time limits as may be determined by the Commission as being reasonable for carrying out such plans, the backfilling requirements of this chapter may be modified by the Commission.

(4) As determined by regulations of the Commission, time limits shall be established requiring backfilling, grading and planting to be kept current. All backfilling and grading shall be completed before necessary equipment is moved from the operation;

(5) If the operator or other person desires to conduct drift mining upon the premises or use the openings for haulage-ways or other lawful purposes, the operator may designate locations to be used for such purposes at which places it will not be necessary to backfill as herein provided for until such drift mining or other use is completed, during which time the bond on file for that portion of the operation shall not be released. That portion of such locations shall be described and designated on the map attached thereto;

(6) When the backfilling and grading have been completed and approved by the Division, the Director shall release the bond which was filed for that portion of such operation in its full amount less one hundred dollars per acre, which shall be retained by the Division until such time as the planting and revegetation is done according to law and approved by the Division, at which time the Director shall release the bond in the remaining amount of one hundred dollars per acre.

350.095 VEGETATIVE COVER REQUIREMENTS. After the operation has been backfilled, graded and approved by the Division, the operator shall prepare the soil and plant trees, shrubs, grasses, and legumes upon the area of the land affected in order to provide a suitable vegetative cover. The seed or plant mixtures, quantities, method of planting, type and amount of lime or fertilizer, and any other measures necessary to provide a suitable vegetative cover

shall be defined by regulations of the Commission.

350.100 TIME FOR COMMENCEMENT AND COMPLETION OF RECLAMATION; DEFERRED PLANTING; AUTHORITY TO PLANT DIFFERENT AREA. (1) It shall be the duty of an operator to commence the reclamation of the area of land affected by his operation as soon as possible after the beginning of strip mining of that area in accordance with plans previously approved by the Division, and to complete such reclamation within twelve months after the permit has expired except that such grading, back-filling and water management practices that are approved in the plans shall be kept current with the operation as defined by regulations of the Commission and no permit or supplement to a permit shall be issued, if in the discretion of the Division, these practices are not current;

(2) If an investigation indicates that planting so as to provide vegetative cover of an area of land affected by strip mining may not be successful, the Division may authorize the operator to defer such planting until the soil has become suitable for such purposes and a yearly report shall be filed with the Division indicating the soil conditions until a successful planting or seeding has been completed. It may authorize the operator, with the approval of the Commission, to do planting to provide vegetative cover for a different area of land in lieu of that covered by his permit. Such different area of land must be land affected by strip mining in the past which has soil that has become suitable for planting, of not less acreage than the land covered by the permit. An application by the operator for authority to plant a different area of land shall identify the different area and shall be accompanied by a map

showing its location, area and boundaries. The application shall be accompanied by the written consent of the owner of the land covered by the permit to release the operator from his obligation to provide a vegetative cover for the land covered by the permit. If the Division grants the application for the planting of a different area of land and the planting is carried out in accordance with its orders, the operator shall be relieved of his obligation to provide a vegetative cover for the area of land affected by his operation for which a different area of land has been substituted.

350.110 PARTIAL RELEASE OF BOND WHEN PLANTING DEFERRED; PAYMENT IN LIEU OF FORFEITURE. If the Division authorizes an operator to defer planting to provide vegetative cover for an area of land, it shall set the time within which such planting shall be carried out. If the operator has carried out on that area of land the method of operation, backfilling, grading and reclamation plans approved by the Division other than the planting, the Division shall issue to the operator and to his surety a release of his surety bond or other securities held on deposit for each acre of land for which such method of operation, backfilling, grading and reclamation have been carried out, less the sum of one hundred dollars for each acre, but in no case shall the bond be reduced below one thousand dollars except as provided in KRS 350.060. The remaining amount of the bond of one hundred dollars for each acre of land affected shall remain in the possession of the Division until a satisfactory planting plan has been carried out, or until it has been forfeited by the operator. If the remainder is forfeited, it shall be expended by the Division in a planting program for the

area of land for which it has been posted. If the operator does not meet the planting requirements but does not want his bond forfeited, he may pay to the Division a sufficient sum to cover the remaining reclamation costs and the bond filed by him as surety may then be released by the Division.

350.113 PLANTING REPORTS, REQUIREMENTS, CONTENTS, INSPECTION, APPROVAL. (1) When the planting of a permit area is completed, the operator shall file a planting report with the Division on a form to be prescribed and furnished by the Division, giving the following information:

- (a) Identification of the operation;
- (b) The type of planting or seeding, including mixtures and amounts;
- (c) The date of planting or seeding;
- (d) The area of land planted;
- (e) Such other relevant information as the Director may require;

(2) All planting reports shall be certified by the operator;

(3) Inspection and evaluation for vegetative cover shall be made as soon as it is possible to determine if a satisfactory stand has been established. In no instance shall this vegetative cover check be made until just prior to or after the completion of the first growing season. If the Division determines that a satisfactory vegetative cover has been established, it shall then release the remaining bond held on the area reclaimed.

350.117 TREES, SHRUBS AND PLANTS, OWNERSHIP. All trees, shrubs, grasses and legumes required by this chapter and regulations to be planted or seeded on the area of land affected shall become the property of the landowner, unless the operator and the landowner agree otherwise.

350.120 REPORT ON EXPIRATION OF PERMIT, CONTENTS. Within sixty days after the date of expiration of a permit, the operator shall file with the Division a report stating the exact number of acres of land affected by the operation, the extent of the reclamation already accomplished by him, and such other information as may be required by the rules and regulations of the Division and the Commission. The report shall be accompanied by a copy of the map filed with the original application which shall show any revisions made necessary by results of the operation.

350.130 SUSPENSION OF PERMIT; BOND FORFEITURE; DENIAL OF FUTURE PERMITS FOR NONCOMPLIANCE. (1) If any of the requirements of this chapter or rules or regulations adopted pursuant thereto or the orders of the Division and the Commission have not been complied with within the time limits set by the Division or the Commission or by this chapter, the Division shall cause a notice of non-compliance to be served upon the operator, or where found necessary, the Director shall order the suspension of a permit. Such notice or order shall be handed to the operator in person or served by registered mail addressed to the permanent address shown on the application for a permit. The notice of non-compliance or order of suspension shall specify in what respects the operator has failed to comply with this chapter or the regulations or orders of the Division and the Commission. If the operator has not reached an agreement with the Division or has not complied with the requirements set forth in the notice of non-compliance or order of suspension within time limits set therein, the permit may be revoked by order of the Commission and the performance bond shall then be forfeited to the Division;

(2) When a bond is forfeited pursuant to the provisions of this chapter, the Director shall give notice to the Attorney General, who shall collect the forfeiture;

(3) An operator whose mining permit has been revoked shall not be eligible to receive another permit or to have suspended permits reinstated until he shall have complied with all the requirements of this chapter in respect to former permits issued him, provided, further, that no operator shall be eligible to receive another permit who has forfeited any bond unless the land for which the bond was forfeited has been reclaimed without cost to the state or the operator has paid into the Strip Mining and Reclamation Fund such sum as the Commission finds is adequate to reclaim such lands. The Division shall not issue any additional permits to any operator who has repeatedly been in non-compliance or violation of this chapter, or who has had permits revoked on more than three occasions.

350.135 SUCCESSION OF ONE OPERATOR BY ANOTHER AT UNCOMPLETED PROJECT. Where one operator succeeds another at any uncompleted operation, either by sale, assignment, lease or otherwise, the Division may release the first operator from all liability under this act as to that particular operation: Provided, however, that both operators have been issued a permit and have otherwise complied with the requirements of this chapter, and the successor operator assumes as part of his obligation under this chapter, all liability for the reclamation of the area of land affected by the former operator.

350.140 STRIP MINING AND RECLAMATION FUND. (1) All sums received through the payment of fees or the forfeiture of bonds shall be placed in the State Treasury and credited to a special agency account to be designated as the Strip Mining and Reclamation Fund.

(2) This fund shall be available to the Division and may be expended for the administration and enforcement of this chapter and for the reclamation of land affected by strip mining operations. Any unencumbered and any unexpended balance of this fund remaining at the end of any fiscal year shall not lapse but shall be carried forward for the purposes of this chapter until expended or until appropriated by subsequent legislative action.

(3) All such forfeitures collected after June 14, 1962, as provided in this chapter, shall be expended to reclaim and rehabilitate land affected in accordance with the provisions of this chapter. Insofar as is reasonably practicable, the monies shall be expended upon the lands for which the permit was issued and for which the bond was given.

350.150 RECLAMATION WORK BY DIVISION; PROCEDURE; ACCEPTANCE OF FEDERAL AND OTHER FUNDS; ACCESS TO LAND. (1) In the reclamation of land affected by strip mining for which it has funds available, the Division may avail itself of any services which may be provided by other state agencies or by agencies of the Federal Government, and may compensate them for such services. The Division may also receive any federal funds, state funds or any other funds for the reclamation of land affected by strip mining. The Division may cause the reclamation work to be done by its own employees or by employees of other

governmental agencies, Soil Conservation Districts, or through contracts with qualified persons. Such contracts shall be awarded to the lowest responsible bidder upon competitive bids after reasonable advertisement. The Division and any other agency and any contractor under a contract with the Division shall have the right of access to the land affected to carry out such reclamation.

(2) Any funds available to the Commission and any public works program may be used and expended to reclaim and rehabilitate any lands that have been subjected to strip mining that have not been reclaimed and rehabilitated in accordance with standards set by this chapter or regulations thereunder and which are not covered by bond to guarantee such reclamation;

(3) A person or organization, having qualifications acceptable to the Commission, may post bond or a cash deposit, in a sum determined by the Commission, and assume the liability for carrying out the reclamation plan approved by the Division in areas where the mining operation and any necessary grading and backfilling have been completed. The Division shall then release the bond posted by the operator for such area.

350.152 ACQUISITION OF LAND BY COMMONWEALTH FOR RECLAMATION PURPOSES. (1) The Commonwealth, acting by and through its Department of Natural Resources, shall have the power to acquire, either by negotiation or by exercise of the power of eminent domain, land which has been affected or disturbed by strip or auger mining, which now consists of orphan banks or unreclaimed spoil piles, and which in its present state is hazardous or otherwise detrimental to the health and safety of the citizens of the Commonwealth, and for the restoration of which Federal funds have been made available;

(2) Prior to acquiring any land pursuant to Part 3 of this Act, the Department of Natural Resources shall extend to the owners thereof an opportunity to backfill, grade, plant and do other acts of restoration thereon to the same extent and within the same time limits as prescribed by Chapter 350 of the Kentucky Revised Statutes and regulations adopted pursuant thereto. If the owner or owners agree in writing to perform such restoration and, weather permitting, start such restoration within a period of thirty days, the land shall not be acquired by the Commonwealth;

(3) The Department of Natural Resources shall attempt to purchase any land which it has determined should be acquired for the purpose of restoration and which the owners have not agreed to restore as provided in subsection (2) above. In any case where the Department and the owners of the land are unable to agree upon the amount to be paid for the land, the Department may exercise the power of eminent domain against such land by filing a condemnation suit under any procedure as provided in Chapter 416 of the Kentucky Revised Statutes;

(4) The purchase price, in the case of a negotiated acquisition, or the damages as finally determined, in the case of acquisition by condemnation, and the necessary expenses incidental thereto, shall be paid from the Reclamation Fund or appropriations made by the General Assembly for such purposes and appropriations to which Federal funds made available for such purposes have been credited.

350.154 RESTORATION AND RECLAMATION BY DIVISION OF RECLAMATION. The Division of Reclamation shall have the power to backfill, grade, plant and perform other acts of restoration and reclamation, or con-

tract for the performance of such restoration work, on any lands acquired under Part 3 of this Act, to the extent and subject to such conditions as State or Federal Funds are appropriated and available therefor.

350.156 RESTORED LAND, TRANSFER TO STATE OR LOCAL AGENCIES. (1) After restoration of the acquired land, the Department of Natural Resources may, with the approval of the Governor, transfer jurisdiction of such land, or any portion thereof, to any State agency that can best utilize such land for public purposes;

(2) If the retention of such land is determined to be impractical, the Department of Natural Resources, may, with the approval of the Governor, sell such land to political subdivisions of the Commonwealth at the cost of acquisition and restoration or public sale to the highest bidder. Such land shall be sold subject to the condition that no strip mining shall be carried on thereon at any time thereafter. The proceeds of any such sale shall be credited to the Reclamation Fund as provided for in Section 37(2) of the Act.

350.158 LAND UNDER BOND FOR RESTORATION NOT TO BE ACQUIRED. No land, with respect to which a bond conditioned upon the restoration thereof is in effect, shall be acquired pursuant to the provisions of Part 3 of this Act, nor shall this Act be construed to relieve any person from any obligation to backfill, grade, plant or perform other restoration and reclamation required by law.

350.161 ACQUISITION AND DISPOSAL OF LAND, HOW GOVERNED. All acquisitions and disposals of land or any interests therein pursuant to the authority granted by Part 3 of this Act shall be governed by the applicable provisions of Chapter 45 and 56 of the Kentucky Revised Statutes.

350.163 DIVISION MAY ACCEPT STATE AND FEDERAL FUNDS; RECLAMATION FUND CREATED. (1) The Division of Reclamation is authorized and empowered to receive and accept from the Commonwealth or any of its agencies and from Federal agencies appropriations or grants to accomplish the purposes of Part 3 of this Act, and to receive and accept aid or contributions from any source of either money, property, labor or any other things of value, to accomplish the purposes of Part 3 of this Act;

(2) All funds available or paid to the Division of Reclamation under Part 3 of this Act, shall be placed in the State Treasury and credited to a special agency account to be designated as the Reclamation Fund. Any unencumbered and any unexpended balance of this fund at the end of any fiscal year shall not lapse but shall be carried forward for the purposes of Part 3 of this Act until expended or until appropriated by subsequent legislative action.

350.170 CONSTRUCTION OF CHAPTER. This chapter shall not be construed as repealing any of the laws of the Commonwealth relating to the pollution of the waters thereof, any conservation or mining laws, but shall be held and construed as ancillary and supplemental thereto.

350.185 ADVISORY COMMITTEES. The Reclamation Commission may appoint such advisory committees as would be of assistance to the Commission in the development of programs and policies.

350.200 SIGNS TO BE POSTED AT MINING SITE, SIZE, CONTENTS. All strip mines operating under a permit from the Division shall display appropriate signs at the points of access to each operation adjacent to the nearest public highway. These signs shall be at least two feet by four feet, constructed of a wooden or other durable material, and clearly identify the name of the operator and number of his strip mining permit. Such signs shall be maintained during the life of the operation. Failure to post such sign shall be grounds for the revocation of the permit.

350.210 MONUMENTS MARKING PERMIT AREAS. The operator shall place a monument at the beginning and end of each original and supplemental permit area. Such monument shall consist of a metal pipe, at least three inches in diameter, which shall be permanently fixed by the operator to protrude at least three feet above the surface. The permit number shall be placed on the monument.

350.220 USE OF EXPLOSIVES, REGULATION. The use of explosives for the purpose of blasting in connection with strip mining in the neighborhood of any public highway, public stream or other body of water, dwelling house, public building, school, church, cemetery, commercial or institutional building or pipe line shall be done in accordance with regulations adopted by the Commission.

350.230 CONFORMANCE TO STATUTES AND REGULATIONS REQUIRED, WHEN. Irrespective of date of issuance of a permit, all operators shall immediately conform to any statutes enacted or regulations adopted on the effective date of such statute or regulation. This section shall not require the regrading or replanting of any area on which such work was satisfactorily performed prior to the effective date of the statute or regulation.

350.240 CLAY MINING REGULATIONS. The Reclamation Commission, after Public Hearing, may adopt reasonable regulations for the reclamation of land disturbed or removed in the mining of clay. Such regulations shall encourage water impoundments and shall follow the standards established in Article III of the Interstate Mining Compact. The Reclamation Commission shall have the authority to adopt such regulations prior to the effective date of the Interstate Mining Compact and irrespective of whether the State becomes a member or withdraws from membership in the Interstate Mining Compact.

350.250 CITIZEN'S COMPLAINTS OF VIOLATION; MANDAMUS AGAINST OFFICERS. Any citizen of this Commonwealth having knowledge that any of the provisions of this chapter or regulations adopted thereunder are willfully and deliberately not being enforced by any public officer or employee, whose duty it is to enforce such provisions of this chapter and regulations thereunder, may bring such failure to enforce the law to the attention of such public officer or employee. To provide against unreasonable and irresponsible demands being made, all such demands to enforce the law must be in

writing, under oath, with facts set forth specifically stating the nature of the failure to enforce the law. The stating of false facts and charges in such affidavit shall constitute perjury and shall subject the affiant to penalties provided under the law of perjury. If such public officer or employee neglects or refuses for any unreasonable time after demand to enforce such provision, any such citizen shall have the right to bring an action of mandamus in the Circuit Court of the county in which the operation which relates to the alleged lack of enforcement is being conducted. The court, if satisfied that any provision of this chapter or regulation thereunder is not being enforced, may make an appropriate order compelling the public officer or employee, whose duty it is to enforce such provision, to perform his duties, and upon failure to do so such public officer or employee shall be held in contempt of court and shall be subject to the penalties provided by the laws of the Commonwealth in such cases.

350.300 INTERSTATE MINING COMPACT ENACTED. The Interstate Mining Compact is hereby enacted into law and entered into with all other jurisdiction legally joining therein in the form substantially as follows.

INTERSTATE MINING COMPACT ARTICLE I. FINDINGS AND PURPOSES

- (a) The party States find that:
1. Mining and the contributions thereof to the economy and wellbeing of every state are of basic significance.
 2. The effects of mining on the availability of land, water and other resources for other uses present special problems

which properly can be approached only with due consideration for the rights and interests of those engaged in mining, those using or proposing to use these resources for other purposes, and the public.

3. Measures for the reduction of the adverse effects of mining on land, water and other resources may be costly and the devising of means to deal with them are of both public and private concern.

4. Such variables as soil structure and composition, physiography, climatic conditions, and the needs of the public make impracticable the application to all mining areas of a single standard for the conservation, adaptation, or restoration of mined land, or the development of mineral and other natural resources; but justifiable requirements of law and practice relating to the effects of mining on land, water, and other resources may be reduced in equity or effectiveness unless they pertain similarly from State to State for all mining operations similarly situated.

5. The States are in a position and have the responsibility to assure that mining shall be conducted in accordance with sound conservation principles, and with due regard for local conditions.

(b) The purposes of this compact are to:

1. Advance the protection and restoration of land, water and other resources affected by mining.

2. Assist in the reduction or elimination or counteracting of pollution or deterioration of land, water and air attributable to mining.

3. Encourage, with due recognition of relevant regional, physical, and other differences, programs in each of the party States which will achieve comparable results

in protecting, conserving, and improving the usefulness of natural resources, to the end that the most desirable conduct of mining and related operations may be universally facilitated.

4. Assist the party States in their efforts to facilitate the use of land other resources affected by mining, so that such use may be consistent with sound land use, public health, and public safety, and to this end to study and recommend, wherever desirable, techniques for the improvement, restoration or protection of such land and other resources.

5. Assist in achieving and maintaining an efficient and productive mining industry and in increasing economic and other benefits attributable to mining.

ARTICLE II. DEFINITIONS

As used in this compact, the term:

(a) "Mining" means the breaking of the surface soil in order to facilitate or accomplish the extraction or removal of minerals, ores, or other solid matter; any activity or process constituting all or part of a process for the extraction or removal of minerals, ores, and other solid matter from its original location; and the preparation, washing, cleaning, or other treatment of minerals, ores, or other solid matter so as to make them suitable for commercial, industrial, or construction use; but shall not include those aspects of deep mining not having significant effect on the surface, and shall not include excavation or grading when conducted solely in aid of on site farming or construction.

(b) "State" means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, or a Territory or Possession of the United States.

ARTICLE III. STATE PROGRAMS

Each party State agrees that within a reasonable time it will formulate and establish an effective program for the conservation and use of mined land, by the establishment of standards, enactment of laws, or the continuing of the same in force, to accomplish;

1. The protection of the public and the protection of adjoining and other landowners from damage to their lands and the structures and other property thereon resulting from the conduct of mining operations or the abandonment or neglect of land and property formerly used in the conduct of such operations.

2. The conduct of mining and the handling of refuse and other mining wastes in ways that will reduce adverse effects on the economic, residential, recreational or aesthetic value and utility of land and water.

3. The institution and maintenance of suitable programs for adaptation, restoration, and rehabilitation of mined lands.

4. The prevention, abatement and control of water, air and soil pollution resulting from mining, present, past and future.

ARTICLE IV. POWERS

In addition to any other powers conferred upon the Interstate Mining Commission, established by Article V of this compact, such Commission shall have power to:

1. Study mining operations, processes and techniques for the purpose of gaining knowledge concerning the effects of such operations, processes and techniques on land, soil, water, air, plant and animal life, recreation, and patterns of community or regional development or change.

2. Study the conservation, adaptation, improvement and restoration of land and related resources affected by mining.

3. Make recommendations concerning any aspect or aspects of law or practice and governmental administration dealing with matters within the purview of this compact.

4. Gather and disseminate information relating to any of the matters within the purview of this compact.

5. Cooperate with the federal government and any public or private entities having interests in any subject coming within the purview of this compact.

6. Consult, upon the request of a party State and within resources available therefor, with the officials of such State in respect to any problem within the purview of this compact.

7. Study and make recommendations with respect to any practice, process, technique, or course of action that may improve the efficiency of mining or the economic yield from mining operations.

8. Study and make recommendations relating to the safeguarding of access to resources which are or may become the subject of mining operations to the end that the needs of the economy for the products of mining may not be adversely affected by unplanned or inappropriate use of land and other resources containing minerals or otherwise connected with actual or potential mining sites.

ARTICLE V. THE COMMISSION

(a) There is hereby created an agency of the party States to be known as the "Inter-state Mining Commission", hereinafter called "the Commission". The Commission shall be composed of one commissioner from each party State who shall be the Governor

thereof. Pursuant to the laws of his party State, each Governor shall have the assistance of an advisory body (including membership from mining industries, conservation interests, and such other public and private interests as may be appropriate) in considering problems relating to mining and in discharging his responsibilities as the commissioner of his State on the Commission. In any instance where a Governor is unable to attend a meeting of the Commission or perform any other function in connection with the business of the Commission, he shall designate an alternate, from among the members of the advisory body required by this paragraph, who shall represent him and act in his place and stead. The designation of an alternate shall be communicated by the Governor to the Commission in such manner as its bylaws may provide.

(b) The commissioners shall be entitled to one vote each on the Commission. No action of the Commission making a recommendation pursuant to Article IV-3, IV-7, and IV-8 or requesting, accepting or disposing of funds, services, or other property pursuant to this paragraph, Articles V(g), V(h), or VII shall be valid unless taken at a meeting at which a majority of the total number of votes on the Commission is cast in favor thereof. All other action shall be by a majority of those present and voting: provided that action of the Commission shall be only at a meeting at which a majority of the commissioners, or their alternates, is present. The Commission may establish and maintain such facilities as may be necessary for the transacting of its business. The Commission may acquire, hold, and convey real and personal property and any interest therein.

(c) The Commission shall have a seal.

(d) The Commission shall elect annually, from among its members, a chairman, a vice-chairman, and a treasurer. The Commission shall appoint an Executive Director and fix his duties and compensation. Such Executive Director shall serve at the pleasure of the Commission. The Executive Director, the Treasurer, and such other personnel as the Commission shall designate shall be bonded. The amount or amounts of such bond or bonds shall be determined by the Commission.

(e) Irrespective of the civil service, personnel or other merit system laws of any of the party States, the Executive Director with the approval of the Commission, shall appoint, remove or discharge such personnel as may be necessary for the performance of the Commission's functions, and shall fix the duties and compensation of such personnel.

(f) The Commission may establish and maintain independently or in conjunction with a party State, a suitable retirement system for its employees. Employees of the Commission shall be eligible for social security coverage in respect of old age and survivor's insurance provided that the Commission takes such steps as may be necessary pursuant to the laws of the United States, to participate in such program of insurance as a governmental agency or unit. The Commission may establish and maintain or participate in such additional programs of employee benefits as it may deem appropriate.

(g) The Commission may borrow, accept or contract for the services of personnel from any State, The United States, or any other governmental agency or from any person, firm, association or corporation.

(h) The Commission may accept for any of its purposes and functions under this compact any and all donations, and grants of money, equipment, supplies, materials and services, conditional or otherwise, from any State, the United States, or any other governmental agency, or from any person, firm, association or corporation, and may receive, utilize and dispose of the same. Any donation or grant accepted by the Commission pursuant to this paragraph or services borrowed pursuant to paragraph (g) of this Article shall be reported in the annual report of the Commission. Such report shall include the nature, amount and conditions, if any, of the donation, grant or services borrowed and the identity of the donor or lender.

(i) The Commission shall adopt bylaws for the conduct of its business and shall have the power to amend and rescind these bylaws. The Commission shall publish its bylaws in convenient form and shall file a copy thereof and a copy of any amendment thereto, with the appropriate agency or officer in each of the party States.

(j) The Commission annually shall make to the Governor, legislature and advisory body required by Article V(a) of each party State a report covering the activities of the Commission for the proceeding year, and embodying such recommendations as may have been made by the Commission. The Commission may make such additional reports as it may deem desirable.

ARTICLE VI. ADVISORY, TECHNICAL, AND REGIONAL COMMITTEES

The Commission shall establish such advisory, technical, and regional committees as it may deem necessary, membership on

which shall include private persons and public officials, and shall cooperate with and use the services of any such committees and the organizations which the members represent in furthering any of its activities. Such committees may be formed to consider problems of special interest to any party States, problems dealing with particular commodities or types of mining operations, problems related to reclamation, development, or use of mined land, or any other matters of concern to the Commission.

ARTICLE VII. FINANCE

(a) The Commission shall submit to the Governor or designated officer or officers of each party State a budget of its estimated expenditures for such period as may be required by the laws of that party State for presentation to the legislature thereof.

(b) Each of the Commission's budgets of estimated expenditures shall contain specific recommendations of the amount or amounts to be appropriated by each of the party States. The total amount of appropriations requested under any such budget shall be apportioned among the party States as follows: one-half in equal shares; and the remainder in proportion to the value of minerals, ores, and other solid matter mined. In determining such values, the Commission shall employ such available public source or sources of information as, in its judgement, present the most equitable and accurate comparisons among the party States. Each of the Commission's budgets of estimated expenditures and requests for appropriations shall indicate the source or sources used in obtaining information concerning value of minerals, ores, and other solid matter mined.

(c) The Commission shall not pledge the credit of any party State. The Commission may meet any of its obligations in whole or in part with funds available to it under Article V(h) of this compact; provided that the Commission takes specific action setting aside such funds prior to incurring any obligation to be met in whole or in part in such manner. Except where the Commission makes use of funds available to it under Article V(h) hereof, the Commission shall not incur any obligation prior to the allotment of funds by the party States adequate to meet the same.

(d) The Commission shall keep accurate accounts of all receipts and disbursements. The receipts and disbursements of the Commission shall be subject to the audit and accounting procedures established under its bylaws. All receipts and disbursements of funds handled by the Commission shall be audited yearly by a qualified public accountant and the report of the audit shall be included in and become part of the annual report of the Commission.

(e) The accounts of the Commission shall be open at any reasonable time for inspection by duly constituted officers of the party States and by any persons authorized by the Commission.

(f) Nothing contained herein shall be construed to prevent Commission compliance with laws relating to audit or inspection of accounts by or on behalf of any government contributing to the support of the Commission.

ARTICLE VIII. ENTRY INTO FORCE AND WITHDRAWAL

(a) This compact shall enter into force when enacted into law by any four or more States. Thereafter, this compact shall become effective as to any other State upon

its enactment thereof.

(b) Any party State may withdraw from this compact by enacting a statute repealing the same, but no such withdrawal shall take effect until one year after the Governor of the withdrawing State has given notice in writing of the withdrawal to the Governors of all other party States. No withdrawal shall affect any liability already incurred by or chargeable to a party State prior to the time of such withdrawal.

ARTICLE IX. EFFECT ON OTHER LAWS

Nothing in this compact shall be construed to limit, repeal or supersede any other law of any party State.

ARTICLE X. CONSTRUCTION AND SEVERABILITY

This compact shall be liberally construed so as to effectuate the purposes thereof. The provisions of this compact shall be severable and if any phrase, clause, sentence or provisions of this compact is declared to be contrary to the constitution of any State or of the United States or the applicability thereof to any government, agency, person or circumstance is held invalid, the validity of the remainder of this compact and the applicability thereof to any government, agency, person or circumstance shall not be affected thereby. If this compact shall be held contrary to the constitution of any State participating herein, the compact shall remain in full force and effect as to the remaining party States and in full force and effect as to the State affected as to all severable matters.

350.310 MINING COUNCIL, CREATION, MEMBERS, TERM. (1) The "Mining

Council", hereinafter called "the Council", is hereby established in the office of the Governor. The Council shall be the advisory body referred to in Article V(a) of the Interstate Mining Compact. No member of the Council shall receive any compensation on account of his service thereon, but any such member shall be entitled to reimbursement for expenses actually incurred by him in connection with his possible service as the Governor's alternate on the Interstate Mining Commission;

(2) The Council shall be composed of seven members: three of whom shall be representatives of mining industries; two of whom shall be representatives of non-governmental conservation interests; the Commissioner of Natural Resources and the Director of the Division of Reclamation;

(3) The members of the Council representing mining industries and non-governmental conservation interests shall be appointed by the Governor. The term of office of such members shall be for four years concurrent with that of the Governor or until their successor has been qualified.

350.320 BYLAWS OF INTERSTATE MINING COMMISSION, WHERE FILED. In accordance with Article V(i) of the Compact, the Commission shall file copies of its by-laws and any amendments thereto with the Division of Reclamation.

350.990 PENALTIES. (1) Any person or operator who violates any of the provisions of this chapter or regulations adopted pursuant thereto or who fails to perform the duties imposed by these provisions or fails or refuses to obtain a permit as provided herein, or who violates any determination or order promulgated pursuant to the pro-

visions of this chapter, shall be liable to a civil penalty of not less than one hundred dollars nor more than one thousand dollars for said violation, and an additional civil penalty of not less than one hundred dollars nor more than one thousand dollars for each day during which such violation continues, and in addition, may be enjoined from continuing such violations as hereinafter provided in this section. Such penalties shall be recoverable in an action brought in the name of the Commonwealth of Kentucky by the Attorney General in the Franklin Circuit Court or in the Circuit Court having jurisdiction of the defendant, and all sums recovered shall be placed in the State Treasury and credited to the Strip Mining and Reclamation Fund;

(2) It shall be the duty of the Attorney General, upon the request of the Director, to bring an action for the recovery of the penalties herein provided for and to bring an action for a restraining order, temporary or permanent injunction, against any operator or other person violating or threatening to violate any of the provisions of this chapter or violating or threatening to violate any order or determination promulgated pursuant to the provisions of this chapter;

(3) Any person who shall willfully violate any of the provisions of this chapter, or any determination or order promulgated pursuant to the sections of this chapter which have become final shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than five hundred dollars and not more than five thousand dollars. Each day on which such violation occurs shall constitute a separate offense.

REGULATIONS OF THE KENTUCKY DEPARTMENT OF NATURAL RESOURCES CONCERN-
ING STRIP MINING

Re: Access Road Relates to KRS 350.090

Pursuant to the authority vested in the Strip Mining and Reclamation Commission by KRS 350.028, the following regulation is hereby adopted.

1. The access road shall be that road constructed by the operator which ends at the pit. Paths or trails between pits, for the temporary movement of equipment, shall not be considered as access roads but nevertheless shall be part of the area affected.

2. No road shall be constructed up a stream channel proper or so close that material will be spilling into the channel. Minor alterations and relocations of streams will be permitted if the stream will not be blocked and if no damage is done to the stream or adjoining landowners.

3. The centerline of the proposed road must be flagged with stakes or an acceptable substitute at the time the plan of reclamation is proposed.

4. The grading of an access road shall be such that:

(a) No sustained grade shall exceed 10% ;

(b) The maximum pitch grade shall not exceed 20% for 300 feet ;

(c) There shall not be more than 300 feet of maximum pitch grade for each 1,000 feet of road constructed.

5. The grade on switch back curves must be reduced to less than the approach grade and shall not be greater than 10%.

6. A ditch shall be provided on both sides of a through-cut and on the inside shoulder of a cut-fill section, with ditch relief cross drains being spaced according to grade. Water shall be intercepted before reaching a switch back or large fill and be led off. Water on a fill or switch back shall be released below the fill, not over it.

7. Ditch relief culverts will be installed according to the following table of spacings in terms of percent of road grade.

<i>Road grade in percent</i>	<i>Spacing of culverts in feet</i>
2-5	300-800
6-10	200-300
11-15	100-200
16-20	100

8. Culvert openings installed on access roads shall not be less than 100 square inches in area.

9. If drainage structures are required in order to cross a stream channel, they shall be such as not to affect the normal flow of the stream. Consideration will be given to the time of year the stream is crossed and the length of time the stream channel is used, but in no event, and under no condition will the normal flow of the stream be affected or the sediment load of the stream be materially increased.

10. Cut slopes shall not be more than 1:1 (45 degrees) in soils and more than 0:1 in rock.

11. All fill and cut slopes shall be seeded during the first planting and/or seeding season after the construction of the road.

12. If a berm is produced in skimming the road, it shall not be left on the ditch side.

13. Roads shall not be surfaced on top with any acid producing material which will produce a runoff of acid, the surface being that part of the road exposed to the elements of wind, rain, and sun.

14. No bridges, culverts, stream crossings, etc. may be removed until the reclamation is completed.

15. When an access road is to be abandoned and shall no longer be used as a road by the operator, the landowners, or the state or national forest services, surface drainage to minimize erosion and vegetative cover shall be provided. Regardless of the future use of the road, adequate surface drainage shall be provided. Abandoned means that the operator has ceased to use the road and has not turned the road over to another party for their use. When the road is abandoned and proper vegetative cover is provided, the bond on the road shall be released. If the road is turned over to another party for their use and adequate surface drainage has been provided, the bond on the road shall be released.

16. Should the division determine that modifications are necessary because of topography or particular watershed situations, the director may, in his discretion,

and with the approval of the Commissioner of Conservation, make such modification. All such modifications shall be presented to the Commission at its next meeting for its concurrence.

17. All grades referred to in this regulation shall be subject to a tolerance of two percent (2%) grade. All measurements referred to in this regulation shall be subject to a tolerance of ten percent (10%) of measurement. All angles referred to in this regulation (#10) shall be measured from the horizontal and shall be subject to a tolerance of five degrees (5°).

Adopted this 11th day of June, 1964.

J. O. MATLICK, *Chairman.*
A. H. MANDT, *Acting Director,*
Department of Mines & Minerals.
ROBERT K. MONTGOMERY, *Acting Director,*
Division of Strip Mining and Reclamation.

Re: Backfilling, Grading, Reclamation and Method of Operation—Relates to KRS 350.093 and 350.100—Revised SMR-Rg-6 (1966)

Pursuant to the authority vested in the Reclamation Commission by KRS 350.028, SMR-Rg-6 is hereby amended to read as follows:

BACKFILLING AND GRADING

(A) Backfilling and grading as required by KRS 350.093 shall be performed as follows:

(1) On lands where the method of operation does not produce a bench (area strip mining):

(a) Complete backfilling shall be required, beginning at or beyond the top of the highwall and sloped to the toe of the spoil bank at a maximum angle not to exceed the approximate original contour of the land with no depressions to accumulate water, and all highwalls and spoil peaks shall be eliminated.

(b) Water diversion ditches or terraces shall be constructed in the final grading to control water runoff and erosion on long uninterrupted slopes and to remove surface water runoff to a safe outlet. For the purpose of this regulation, a diversion ditch shall be a channel constructed on a continuous grade of one to two percent (1%-2%) across the slope, with a supporting ridge on the lower side and the entire ditch seeded to an adaptable grass or grass-legume mixture. The depth and width of the diversion ditch may vary depending on the length and degree of slope.

(c) Lands shall be deemed to have been completely backfilled and graded to their approximate original contour when:

(i) The contour of the land conforms approximately to the contour of the original ground, but the final surface of the restored area need not necessarily have the exact elevations of the original ground surface. However, where a flat surface or a surface with less slope than the original ground surface is desired, such surface shall be deemed to comply with backfilling and grading to the approximate original contour.

(ii) Spoil abutting onto unstripped lands has been graded so as to blend into the adjoining unstripped lands. In order to prevent excessive disturbance of the adjoining unstripped lands through the placing of spoil into already vegetated areas, spoil will be considered as blending into the unstripped lands if the angle between the spoil and the unstripped land is twelve degrees (12°) or less.

(d) Strip mining in areas where the average slope of the original ground can be defined as having an angle of inclination of more than twelve degrees (12°) from the horizontal shall be deemed to produce a bench and such areas may be restored according to the requirements of terrace backfilling.

(2) On lands where the method of operation produces a bench (contour strip mining, auger mining, and highway mining):

(a) Terrace backfilling shall be required according to the provisions of KRS 350.093 (2).

(b) *The maximum bench width of the first cut shall not exceed those limits shown in Table No. 1 of this regulation. Additional cuts in contour strip mining may be taken provided no overburden from the second cut or subsequent cuts is pushed over the outslope formed by the first cut or temporarily or permanently*

stacked or piled on the outer one-third ($\frac{1}{3}$) edge of the fill bench width established by the first cut. The operator shall show on the map, filed with the application for a permit, the degree of slope, within each five hundred feet (500') interval along the contour of the operation, the first measurement to be taken at the starting point of the operation. No trees and brush that are removed from the cut section shall be placed in the upper one-third ($\frac{1}{3}$) portion of the fill section.

(c) Natural drainway in the area of land affected by the operation shall be kept free from overburden. Such drainways shall be identified on the map submitted with the application. If, in the operation, it is necessary to cross such a drainway, proper drainage structures shall be provided. *Sufficient water retarding structures and silt dams constructed to the approval of the Division shall be placed in all natural drainways on every operation before the work begins. The proposed location of such dams and structures shall be indicated on the map submitted as part of the permit application.*

(d) The overburden shall be graded to form the table portion of the terrace backfill so that the water will drain toward the reduced highwall with a slope not to exceed ten degrees (10°). A lateral ditch shall be constructed along the bench to carry water to natural drainways or to properly constructed drainways. Such ditch shall be so constructed as to eliminate depressions in which water will accumulate and form pools.

(e) When a road is left after final grading, the width shall not exceed twenty feet (20') except as turnouts where it shall not exceed thirty feet (30').

(f) *All highwalls from auger mining must be reduced to a slope of forty-five degrees (45°) or less. In strip mining and highwall mining operations all highwalls must be reduced or backfilled, except where the highwall will be composed of solid rock. In such case, the Division may either delete such area from the permit application or modify the highwall reduction requirements. What constitutes solid rock will be determined by the Division, however, highwalls composed mainly of shale shall be reduced. Where the Division determines that the highwall requirements may be modified so that the solid rock highwall need not be reduced to a slope of forty-five degrees (45°) or less either because there is not sufficient soil available to provide a suitable vegetative cover on the reduced highwall, or the reduction or backfilling of the highwall will result in excessive damage to undisturbed vegetated lands above the highwall, the highwall shall be backfilled as much as practicable with soil available from the operation, but in no instance shall such backfill be less than four feet (4') above the seam of coal being worked.*

(g) Within each four thousand feet (4,000') of distance along the bench, where the solid rock highwall is not required to be reduced or backfilled or where there is no natural access to lands above the highwall, at least one suitable access shall be provided. *Any water accumulating on a bench shall be pumped or siphoned into a natural or constructed drainway. The moving of overburden to release such water shall be prohibited unless a drainway can be constructed with the approval of the Division.*

WATER IMPOUNDMENTS

(B) Where a water impoundment is desired under the provisions of KRS 350.093 (3), approval of such alternative plans other than backfilling may be granted by the Commission. Such plans for the construction of water impoundments shall be submitted for approval by the Division and are encouraged provided the following minimum standards are met:

(1) Adequate sources of water are available to maintain the water level of the impoundment at least four feet (4') above the top of the coal seam at all times. Such sources of water supply for impoundments may be from springs, drainage areas of sufficient size, ground water percolation, a flowing stream or any combination of these sources.

(2) Proper measures are taken to prevent undesirable seepage.

(3) Adequate spillways or other measures necessary to control over flow are provided.

(4) Adequate means of access, such as roads or ramps, are left or provided to the water impoundment.

(5) *A bench or terrace shall be provided above, but in near proximity to, the high water level of the impoundment, except on that portion of the water impoundment comprising the highwall of the final cut. Any spoil above the bench*

or terrace shall be graded until it is rounded off and blended into the area contour above the bench or terrace. All spoil piles adjoining access roads to water impoundments shall be reduced to the approximate original contour of the surrounding area. However, the angle of the slope from the road bed to the top of the spoil may be greater than the original contour provided that adequate drainage is provided and measures taken to prevent erosion of the slope, including but not limited to, terracing, vegetation, etc. The road bed must be adequately drained and culverts provided so as to prevent it from being eroded.

(6) The area above the highwall on any water impoundment shall be planted with trees in order to provide a protective barrier and screen. The trees to be planted are as follows:

(1) Three (3) rows of Locusts—3' x 3' spacing, adjacent to the highwall.

(2) Three (3) rows of Conifers—4' x 4' spacing, in front of the Locusts.

(3) The above trees are to be planted in such a way that they will not be carried over the highwall by erosion but not so far back that they will not provide a protective barrier and screen for the top of the highwall. All such planting will be subject to the approval of the field inspector.

* * * * *

(7) A narrative description of the water impoundment shall be submitted in addition to the plans and specifications. This narrative shall describe in detail all pertinent information pertaining to the water impoundment.

ACID MINE DRAINAGE

(C) When an abandoned underground mine or acid mine drainage is encountered in the operation, one or all of the following measures to reduce acid pollution shall be taken as determined by the Division.

(1) Sealing;

(2) Impoundment;

(3) Chemical treatment to neutralize acidity.

ACID MATERIALS

(D) All acid-producing or toxic materials (including by way of illustration, but not limited to, rider, rooster, blossom, boney, culm or other sulphur-bearing or aluminum-bearing substances) disturbed shall be buried under at least four feet (4') of clean overburden.

CURRENT GRADING

(E) In order to be considered current grading and backfilling shall meet the following requirements:

(1) On lands where the method of operation does not produce a bench (area strip mining), the grading and backfilling shall not be more than two spoil ridges behind the pit being worked, the spoil from this pit being considered the first ridge. All backfilling and grading shall be completed within ninety (90) days after the completion of an operation or a prolonged suspension of work in the area. Modifications to these requirements may be made by the Division in connection with the backfilling of the final pit.

(2) On lands where the method of operation produces a bench (contour strip mining, auger mining and highwall mining), all coal must be picked up within thirty (30) days following removal of the overburden and the following requirements must be met.

(a) If the operation includes only stripping (no augering or highwall mining), the grading and backfilling shall follow the coal removal by not more than fifteen (15) days, but in no instance shall an area be left ungraded more than 1,500 feet behind the removal of the coal.

(b) If the operation includes stripping and augering, the augering shall follow the stripping by not more than sixty (60) days and the grading and backfilling shall follow the augering by not more than fifteen (15) days, but in no instance shall an area be left ungraded more than 1,500 feet behind the augering.

(c) If the operation includes stripping and highwall mining, the highwall mining shall follow the stripping within a reasonable time as determined by the Division in accordance with the provision of KRS 305.093 (5) and the grading and backfilling shall follow the highwall mining by not more than fifteen

(15) days, but in no instance shall an area be left ungraded more than 1,500 feet behind the highwall mining.

(d) If the operation includes only augering or highwall mining, the grading and backfilling shall follow the augering or highwall mining by not more than fifteen (15) days, but in no instance shall an area be left ungraded more than 1,500 feet behind the augering and highwall mining.

(e) Modifications to these requirements may be made by the Division.

(3) If heavy rains or wet conditions make grading impracticable, the period of time required to be current shall be reasonably extended.

METHODS OF OPERATION

(F) On lands where the method of operation produces a bench (contour strip mining, auger mining and highwall mining), all methods of operation shall be subject to the approval of the Division and be in accord with the following requirements:

(1) The method of operation must comply with all of the specifications in Table I below, which relates to the first cut.

(2) On slopes of more than thirty-three degrees (33°), no fill bench shall be produced. Roads for the moving of equipment may be allowed across deleted areas, provided such roads do not exceed twenty (20°) in width.

(3) On slopes of twenty-eight degrees (28°) or above, only the auger method of mining will be approved.

(4) On benches where the total width will be more than sixty feet (60'), an uncut or undisturbed section of the surface, measuring a minimum of fifteen (15') back toward the highwall from a point at the intersection of a line projected along the top of the coal seam with a projection of the original ground-slope, must be left by the operator creating a box-cut effect in order to maintain a more solid bench on which to deposit the spoil from the first cut.

DEFINITIONS

(G) As used in this regulation, certain words are defined as follows:

(1) Fill Bench—that portion of the bench created beyond the point of intersection of the original slope and the level of coal seam projected.

(2) Solid Bench—that distance between the highwall and the point of intersection of the original slope and the level of coal seam projected.

(3) Highwall—that distance from the point of intersection of the vertical cut and the original slope to the bottom elevation of the coal seam.

(H) The Commission finding that some flexibility is required in the administration of regulations, where special conditions warrant, the director may provide for exceptions to this regulation consistent with the requirements of KRS Chapter 350. All such exceptions shall be presented to the Commission for its approval or rejection.

Table No. I

Slope in degrees:	Maximum bench width (feet)
12 to 14.....	220
15 to 18.....	170
19 to 20.....	155
21.....	140
22.....	130
23.....	120
24.....	110
25.....	100
26.....	90
27.....	80
Auger only (degrees)	
28.....	60
29 to 30.....	55
31 to 33.....	45
33 plus no fill bench.....	

Degree of Slope—a measurement taken from the outcrop or a projection of the outcrop of the coal seam, to be mined, down the slope on which the overburden will be placed.

Bench Width—that distance measured perpendicularly to the highwall which extends from the highwall to the lip of the overburden.

Determination of bench widths shall be subject to a tolerance of five percent.

The Commission finding that an imminent peril to the welfare of the citizens of this Commonwealth is created when spoil material is stacked in great amounts on steep slopes, especially during the coming heavy winter rains and snowfall, an emergency is declared and this regulation shall become effective upon its adoption by the Commission, its approval by the Governor and its filing with the Legislative Research Commission.

Adopted this 8th day of December, 1967, by a majority vote of the Commission, Commissioner Ambrose Mandt cast a dissenting vote.

J. O. MATLICK, *Chairman.*
ELMORE C. GRIM, *Member.*

Approved by and concurring in the finding of an emergency :

EDWARD T. BREATHITT, *Governor.*

I hereby certify that I have examined and approved the above regulation as to form and substance.

DAVID A. SCHNEIDER,
Assistant Attorney General, Department of Natural Resources.

Re: Permits and Reclamation Plans Relates to KRS 350.060 and KRS 350.090

Pursuant to the authority vested in the Strip Mining and Reclamation Commission by KRS 350.028, the following regulation is adopted.

(1) Permits shall be issued pursuant to KRS 350.060 only on the condition that the reclamation plan approved pursuant to KRS 350.090 can be carried out. When conditions develop in the operation which show that the approved reclamation plan cannot be carried out as planned or that additional measures must be taken to eliminate damage to the public and adjacent property owners from soil erosion, water pollution and hazards dangerous to life and property, such modification of or deletions from the plan or changes in the operation shall be ordered by the division in writing as will cause the operation to be in compliance with the requirements of KRS 350 and the regulations of the Commission. The order shall set forth the reasons for which the original plan cannot be carried out and shall be served on the operator by registered mail.

(2) If the operator cannot agree to the modification, deletions or changes, he may, by filing written notice within twenty (20) days after the date of the order of the division, request a hearing by the Commission. The hearing shall be held within twenty (20) days after the request in Frankfort or at such other place as the Commission orders upon reasonable written notice to the operator. The final order of the Commission shall be entered within twenty (20) days after the date of the hearing.

(3) The hearing provided for in section (2) of this regulation shall not suspend the order of the division under section (1) unless so ordered by the division.

Adopted this 18th day of November, 1965.

J. O. MATLICK,
Chairman,
A. H. MANDT,
Commissioner, Department of Mines and Minerals.
ELMORE C. GRIM,
Director, Division of Strip Mining and Reclamation.

I hereby certify that I have examined and approved the above regulation as to form and substance.

DAVID A. SCHNEIDER,
Assistant Attorney General, Department of Natural Resources.

Re: *Vegetative Cover and Standards for Evaluating Vegetative Cover.* Relates to KRS 350.095 and 350.113. Revises SMR-Rg-8 (1966)

Pursuant to the authority vested in the Reclamation Commission by KRS 350.028, SMR-Rg-8 is hereby amended to read as follows:

OBJECTIVE

(A) The objective in revegetation is to stabilize the area as quickly as possible after it has been disturbed. Plants that will give a quick, protective cover and

enrich the soil shall be given priority. These plants should be considered only as a tool in obtaining productive land use and not the end result.

RULES GOVERNING SEEDING OR PLANTING

(B) Appropriate revegetation shall be seeded and/or planted as soon after grading, as possible, provided that seeding and/or planting shall be performed in the proper season in accordance with accepted agricultural and reforestation practices.

(1) The degree of acidity affects a site's productivity since it affects the availability of nutrients and indicates the presence of toxic substance in the soil. Acidity, therefore, has been accepted as the indicator to predict chances for establishing vegetation. Tests for acidity, expressed as pH, shall be made after final grading and before seeding or planting. As a guide, until experience is achieved, about 5 to 10 samples shall be taken per acre. These tests may be made with accepted field indicators (LaMotte Soil Testing Kit, Soiltest Testing Kit, etc.). The results will give information needed to prepare seeding and planting recommendations.

(2) Each site has special problems and requires intelligent planning to achieve stabilization of the area. Revegetation methods and species selection should be based on the following guide lines:

(a) Agricultural use should only be attempted on soils with a pH of 5.5 or above.

(b) Legumes and most perennial grasses should not be seeded where pH is below 4.5.

(c) Trees or shrubs planted in soils down to pH 4.0 will make acceptable growth, however, between pH 3.5 and 4.0 only selected acid tolerant trees or shrubs will survive.

(d) No vegetation can be expected to survive below pH 3.5.

(C) When planting is completed the operator shall file a planting report with the Division of Reclamation on a form to be furnished by the Director.

(D) The Commission finding that some flexibility is required in the administration of regulations, where special conditions warrant, the director may provide for exceptions to this regulation, consistent with the requirements of KRS Chapter 350. All such exceptions shall be presented to the Commission for its approval or rejection.

CONTOUR STRIPPING

(E) On lands where the method of operation produces a bench:

(1) The entire disturbed area shall be fertilized, seeded and planted to legumes, perennial grasses, and trees, except as hereinafter provided.

(2) Roads shall be seeded to legumes and perennial grasses only, no trees being required. This vegetative requirement for roads may be modified if, in the opinion of the Division, the roadway will not contribute serious off-site damage to the public or adjacent property owners.

(3) In the event sixty percent (60%) or more of the disturbed area has a pH of 4.5 and above, then the entire area shall be seeded to legumes and perennial grasses and over-planted with Black Locust at a 8' x 8' spacing.

(4) Where the soil reaction may prevent the establishment of legumes and perennial grasses, then Black Locust shall be planted at a 6' x 6' spacing on the entire area. *In addition to fertilizer, lime is required to help establish vegetation.*

(5) Under certain soil conditions and locations other tree species may be substituted for Black Locust with the approval of the Division.

(6) On very stony areas with pH 4.0 and above that cannot be hand planted without difficulty, direct seeding of trees will be permitted by the Division.

(7) Shrubs for wildlife may be planted to include border plantings, clump plantings and intervening strips, at a 6' x 6' spacing. These plantings shall not exceed twenty percent (20%) of the total area planted.

AREA STRIPPING

(F) On lands where the method of operation does not produce a bench:

(1) The entire disturbed area shall be *fertilized*, seeded and planted to legumes, perennial grasses and trees, except as hereinafter provided.

(2) In the event sixty percent (60%) or more of the disturbed area has a pH of 4.5 and above, then the entire area shall be seeded to legumes and perennial grasses and over-planted with a mixture of hardwood and conifers at a 8' x 8' spacing.

(3) Where the soil reaction may prevent the establishment of legumes and perennial grasses, then an acid tolerant mixture of hardwoods and conifers shall be planted at a 6' x 6' spacing of the entire area. *In addition to fertilizer, lime on such areas is required to help establish vegetation.*

(4) Shrubs for wildlife may be planted to include border plantings, clump plantings and intervening strips at a 6' x 6' spacing. These plantings shall not exceed twenty percent (20%) of the total area planted.

MIXTURE AND SEED REQUIREMENTS

(G) Revegetation of the area shall be subject to the following requirements:

(1) All legume seed, except Black Locust, shall be inoculated.

(2) All Black Locust and Sericea Lespedeza seed shall be scarified except when used in fall and winter seeding.

(3) Experimental planting and/or seeding trees, shrubs, legumes and perennial grasses not normally recommended, is encouraged in limited quantities provided that no more than twenty percent (20%) of the total area shall be planted in these species.

(4) Scarification of the soil, when it has become crusted and hard, is required prior to the seeding of legumes and perennial grasses.

(5) *The application of lime and fertilizer shall be required as set out in subsection (10) below.*

(6) Tree seedling mixtures shall be as follows:

(a) Acid tolerant hardwood mixtures shall consist of three or more of the following:

European Alder	Red Gum
Sycamore	Cottonwood
Red or Silver Maple	River Birch
Green or White Ash	Red Oak
Black Locust	

The use of European Alder and Black Locust nurse trees are encouraged but the Black Locust shall not exceed twenty-five percent (25%) and/or the European Alder fifty percent (50%) of the total mixture. Black Locust shall not be mixed with Sycamore and Cottonwood except in a block or belt type of plantings.

(b) Conifer mixtures shall consist of two or more of the following:

Virginia Pine	Loblolly Pine
Pitch Pine	White Pine
Shortleaf Pine	Scotch Pine

(7) One of the following mixtures shall be used for direct seeding of trees.

(a) Mixture One:

	Pounds per acre
Black Locust.....	2
Sericea Lespedeza.....	5
Kobe and/or Korean Lespedeza.....	10
Ky. 31 Fescue.....	10

(b) Mixture Two: (Use at least two of the Pines)

	Pounds per acre
Loblolly Pine.....	1
Virginia Pine.....	1/2
Shortleaf Pine.....	1/2
Kobe and/or Korean Lespedeza.....	15
Ky. 31 Fescue.....	10

(c) Mixture Three:

	Pounds per acre
Black Locust.....	2
Bi-color Lespedeza.....	5
Kobe and/or Korean Lespedeza.....	10
Ky. 31 Fescue.....	10

(d) Mixture Four: (Use at least two of the Pines)

	Pounds per acre
Loblolly Pine.....	1
Virginia Pine.....	1/2
Shortleaf Pine.....	1/2
Bi-color Lespedeza.....	5
Ky. 31 Fescue.....	15

(8) Planting of wildlife planting shall be one or more of the following:

(a) Shrubs for wildlife planting shall be as described below:

Bi-color Lespedeza	Multiflora Rose
Autumn Olive	Arrowwood
Silky Dogwood	Tatarian Honeysuckle
Japonica Lespedeza	Coral Berry

(b) Additional species with demonstrated ability to survive as shown by planting tests will be allowed.

(9) Legume and perennial grass seed mixture shall be in the following species and rates:

(a) *On sites with pH 4.0 to 4.5:*

	Pounds per acre
Weeping Love Grass*-----	4
Ky. 31 Tall Fescue-----	8
Sericea Lespedeza-----	10

*NOTE: Weeping Love Grass is the only species listed that will grow on spoils with pH as low as 4.0. Fescue is added as a carrier or extender for the love grass seed. Lespedeza is added to provide a chance of legume establishment in spots that may have pH of 4.5 or higher.

(b) On sites with pH 4.5 to 5.5 one of the following mixtures should be used.

(i) *Mixture One—for outcrops and other areas where herbaceous competition with trees is not a problem:*

	Pounds per acre
Ky. 31 Tall Fescue-----	15
Weeping Love Grass-----	2
Kobe and/or Korean Lespedeza-----	5
Sericea Lespedeza-----	15

NOTE: Love Grass will improve chances of getting cover in dry years. Kobe is more acid tolerant and will usually grow better than Korean in spoils of pH 4.5 to 5.0 One-half of the Fescue could be replaced with domestic rye grass.

(ii) *Mixture two—for areas where herbaceous vegetation could compare with slow growing conifers and hardwoods:*

	Pounds per acre
Kobe and/or Korean Lespedeza-----	10
Ky. 31 Tall Fescue-----	15

(10) *Lime shall be required where necessary to bring the pH of the soil up to a minimum of 4.0. Minimum fertilizer requirements for grasses and legumes at time of seeding shall be as follows:*

Soil pH	P ₂ O ₅ pounds per acre	Number of pounds per acre
4 to 4.5-----	100	100
4.5 and above-----	100	60

(11) On sites above 5.5 a wider choice of other pasture and forage species and rates of seeding which will provide suitable cover and are in accordance with acceptable agricultural practices shall be permitted. Information regarding approved species and mixtures may be obtained from the Division.

STANDARDS FOR EVALUATING VEGETATIVE COVER

(H) Inspection and evaluation for vegetative cover shall be made as soon as it is possible to determine if a satisfactory stand has been established. In no instance shall this vegetative cover check be made until just prior to or after the completion of the first growing season.

(I) Annual grasses and small grains shall be considered only as a tool in establishing temporary vegetative cover for restoration. These types of annuals shall not be evaluated in the determination of vegetative cover.

(J) *Standards for Legumes and Perennial Grasses*—There shall be established at least a seventy percent (70%) ground cover. Bare areas shall not exceed one-fourth ($\frac{1}{4}$) acre (100' x 100') in size nor total more than thirty percent (30%) of the area seeded.

(K) *Standards for Woody Plants*—There shall be six hundred (600) or more woody plants living per acre, including volunteers. Distribution of stems must be fairly uniform, with no areas larger than one-fourth ($\frac{1}{4}$) acre (100' x 100') in size of substandard stocking.

Adopted this 8th day of December, 1967, by a majority vote of the Reclamation Commission—Commissioner Ambrose Mandt dissenting.

J. O. MATLICK, *Chairman.*
ELMORE C. GRIM, *Director,*
Division of Reclamation.

I hereby certify that I have examined and approved the above regulations as to form and substance.

DAVID A. SCHNEIDER,
Assistant Attorney General,
Department of Natural Resources.

Re-Preplanning Relates to KRS 350.090

Pursuant to the authority vested in the Reclamation Commission by KRS 350.028, the following regulation is adopted:

(1) The Reclamation Commission recognizes that it is desirable that reclamation as required by Chapter 350 be pre-planned for contiguous mining areas which may contain more acres than will be mined within one year.

(2) Any operator may submit plans for the method of operation, plans of grading and backfilling (including water impoundment) and reclamation plans covering such contiguous mining areas. The requirements for such plans (herein called "area plans") shall be the same as those for plans for annual permits.

(3) If the Reclamation Commission approves an area plan, and the approved plan remains consistent with the requirements and purposes of KRS Chapter 350 and regulations adopted pursuant thereto, the operator shall, without submitting additional plans for the method of operation, backfilling and grading, and reclamation, be granted an annual permit for the number of acres which he plans to mine during the year within the area covered by said area plan.

(4) If the Reclamation Commission approves an area plan, the operator shall be obligated to conduct its method of operation, grading and backfilling, and reclamation in accordance with said area plan.

(5) On application of the operator, an approved area plan may be modified with the approval of the Reclamation Commission.

(6) This regulation shall take effect on June 16, 1966.

Adopted this 19th day of April, 1966.

J. O. MATLICK, *Chairman.*
A. H. MANDT, *Commissioner,*
Department of Mines and Minerals.
ELMORE C. GRIM, *Director,*
Division of Strip Mining and Reclamation.

I hereby certify that I have examined and approved the above regulation as to form and substance.

DAVID A. SCHNEIDER,
Assistant Attorney General,
For the Department of Natural Resources.

Re Blasting Relates to KRS 350.220

Pursuant to the authority vested in the Strip Mine and Reclamation Commission by KRS 350.028 the following regulation is adopted:

(1) All blasting in connection with strip mine operations shall be done by qualified and competent persons with due regard for public safety, health and general welfare. Where strip mine blasting will be done in the neighborhood of any public highway, public stream or other body of water, dwelling

house, public building, school, church, cemetery, commercial or institutional building or pipe line, it shall not be done in such a manner and under such circumstances or conditions as to constitute a danger or to do harm or damage to persons or property described above. This regulation is in no way intended to relieve the operator from any responsibility or liability under any other laws.

(2) This regulation shall take effect on June 16, 1966.

Adopted this 19th day of April, 1966.

J. O. MATLICK,
Chairman.

A. H. MANDT,

Commissioner, Department of Mines and Minerals.

ELMORE C. GRIM,

Director, Division of Strip Mining and Reclamation.

I hereby certify that I have examined and approved the above regulation as to form and substance.

DAVID A. SCHNEIDER,

Assistant Attorney General,

For the Department of Natural Resources.

Re Water Quality Relates to KRS 350.090

In order to establish and maintain an effective program for assuring high quality water in the Commonwealth, coal mine operators shall comply with the following requirements:

(1) *Treatment*

(a) Treatment facilities of sufficient size and number consisting of, but not limited to, collection basins, water retarding structures and silt dams shall be constructed prior to the stripping operation for maintaining a quality of water to specifications in paragraph 1(c) herein. The location of all sediment control facilities shall be indicated on the permit map(s) prior to issuance of the permit.

(b) All treatment facilities shall be kept in proper working order to maintain those specifications in paragraph 1(c) herein, until the operator can demonstrate that the specifications in paragraph 1(c) herein can be met without such treatment facilities. Records of treatment shall be maintained by the operator on forms furnished by the Division.

(c) The operator shall prevent discharge of drainage, into the waters of the Commonwealth from the area of land affected, the pH of which is less than 6.0 or greater than 9.0 or which contains a concentration of iron in excess of seven (7) milligrams per liter (mg/l). The total alkalinity of the discharge must exceed the total acidity. The discharge shall contain no settleable matter, nor shall it contain suspended matter in excess of 150 Jackson Turbidity Units, except during a precipitation event, which the operator must show to have occurred, in which case 1000 Jackson Turbidity Units may not be exceeded. Suspended matter in parts per million (ppm) may not exceed the Jackson Turbidity Units multiplied by 2.20. Sampling and analyses are to be defined and performed according to *Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition*, unless otherwise specified in writing by the Division.

(2) *Drainage*

(a) Water which might drain into the stripping pit shall be intercepted above the highwall by diversion ditches and conveyed by stable channels (designed so they will not erode) or other means to natural or prepared watercourses unless the Division finds these ditches unnecessary. Such ditches shall be built of sufficient size and grade to handle the runoff resulting from a once in ten (10) year storm event as a minimum.

(b) Intermittent streams in the area of land affected shall be kept free of spoil material for a minimum distance of twenty-five (25) feet on each side of the channel. The Division may grant permission to operate within these limits provided that the natural drainage be conveyed across or under the land affected.

(c) No drainage shall be discharged into underground mine workings. When an underground mine or mine drainage is encountered, the operator shall report this occurrence to the Division and bring any discharge into compliance with

paragraph 1(c) herein immediately. Plans must be submitted within five (5) days for permanent control. Upon approval by the Division, the operator shall comply to the plans within thirty (30) days.

(d) Sudden release of large volumes of water onto outer slopes of spoil banks is prohibited.

(e) All drainage originating on the area of land affected must meet the specifications in paragraph 1(c) herein or exit through treatment facilities in accordance with paragraph 1.

(f) The Commission finding that some flexibility is required in the administration of regulations, where special conditions warrant, the director may provide for exceptions to this regulation consistent with the requirements of KRS Chapter 350. All such exceptions shall be presented to the Commission for its approval or rejection.

DEFINITIONS

As used in this regulation, certain words are defined as follows:

Area of Land Affected—means the area of land from which overburden is to be or has been removed and upon which the overburden is to be or has been deposited and shall include all lands affected by the construction of new roads or the improvement or use of existing roads other than public roads, to gain access and to haul coal.

Jackson Turbidity Unit—An arbitrary unit for the optical property of a sample indicating the presence of suspended matter. For preparation of a Standard Jackson Turbidity suspension, see pp. 349-356 of *Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition*.

Settleable Matter—That matter in a sample that will settle in one (1) hour using the test described in page 539, procedure 1.a, of *Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition*.

Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition—is believed to represent the best current practice of American water analysts and to be generally applicable in connection with the problems of water purification, sewage disposal and sanitary investigations. *The Standard Methods for the Examination of Water and Wastewater, Thirteenth Edition* may be obtained from the American Public Health Association, Inc., Publication Office, 1740 Broadway, New York, N.Y. 10019.

The Commission finding that an imminent peril to the citizens of the Commonwealth is created during the coming heavy winter rains, frost, snowfall and loss of vegetative cover, an emergency is declared and the regulation shall become effective upon filing with the Legislative Research Commission and endorsement by the Governor.

The foregoing regulation is hereby adopted by the Reclamation Commission this the 29th day of September, 1971.

Form and Legality Approved:

JAMES S. SHROPSHIRE, *Chairman.*
H. N. KIRKPATRICK, *Member.*
ELMORE C. GRIM, *Member.*

JAMES F. PERKINS,
Attorney for Department of Natural Resources.

Finding of emergency concurred in and endorsement affixed hereto this the 1st day of October, 1971.

LOUIE B. NUNN,
Governor, Commonwealth of Kentucky.

BAGDAD COPPER CORP.,
Phoenix, Ariz., September 27, 1971.

HON. SAM STEIGER,
U.S. Congress,
Washington, D.C.

DEAR SAM: It has come to my attention that Senate Bill S2455 is under consideration by the Senate Interior Committee, and at least one of the provisions of this Bill would regulate strip mining. One normally thinks of coal when strip mining is mentioned, but it is my understanding that the Interior Committee is thinking of all types of surface mining, including large open pits.

SOURCE: Kentucky Revised Statutes Relating to Strip Mining and Reclamation, 1966, Chapter 350.010 (3).

Of particular concern are the possible restoration considerations. I see no way to restore a large open pit copper mine to its original state. These ore bodies last for many decades, so that the amount of material removed is enormous. However, all material is taken from one pit, so that on a unit basis the original land is disturbed much less than for a coal strip mine. Even if it were possible to put all overburden and tailings back into the pit, it would not solve the problem because then the former dump and tailings areas would be denuded.

The need for restoration from an erosion standpoint is probably less than for coal strip mining because most open pits are in relatively arid regions and much of the water would tend to drain to the pit bottom rather than cut gullies in the landscape.

In our business we move mountains, and maybe the mountain in its new location is really about as good as it was in its original location. I can think of no large open pits that have been abandoned, but even if one were, I certainly believe it should be left in a safe condition and there should be sufficient planting done on the tailings ponds, waste dumps, and as much of the pit as possible so that the area is left with at least a partial natural look.

I hope that Congress will agree with this for open pit areas and not consider any requirement for refilling.

Sincerely,

DAVID C. LINCOLN, *President.*

ARIZONA MINING ASSOCIATION,
Phoenix, Ariz., November 17, 1971.

Senator HENRY M. JACKSON,
Chairman, Senate Interior and Insular Affairs Committee, Washington, D.C.

DEAR SENATOR JACKSON: This is written for the purpose of expressing to you and the members of your committee the views of the Arizona Mining Association on the matter of Federal legislation concerning surface mined land restoration and reclamation.

This Association is composed of thirteen member companies who, from their Arizona properties alone, produce annually more copper than is produced by all of the other 49 states combined.

We speak, therefore, with some authority and deep concern for a very significant part of American hardrock mining and with considerable knowledge of the problems involved in the reclamation and restoration of surface lands disturbed by our kind of mining.

I emphasize the phrase "our kind of mining" for the purpose of reemphasizing the fact that there are major differences between strip mining for coal, for example, and open-pit mining for copper. I am sure that most members of this committee are aware of those differences; but some of you may not have had the opportunity to inspect personally many of the great open pit copper mines of the West and to view at first hand the way things were done half a century ago and the way we do things today.

We therefore extend to the Senate Committee on Interior and Insular Affairs, an invitation to come to Arizona on an inspection trip. We will show you the whole picture—the scars of the past, today's methods of operation, our successes and our failures.

And on that trip you will learn at first hand why Arizona so far has no state law governing the reclamation and restoration of surface mined land. I think there are two reasons why we have no such law. First, the people of Arizona, by and large, are satisfied that the copper producing industry of the state already is doing everything possible to ameliorate the effects of our activities upon the landscape, without legal compulsion.

For years we have invited the citizens of Arizona—legislators, teachers, conservationists, the press, anyone who has any interest—not only to come to our properties to inspect what we are doing, but to give us the benefit of their suggestions as to how we can improve. Twice, recently, we have invited the Governor's Advisory Commission on Arizona Environment on tours, once to inspect the differences between what was done years ago and what is done today, once to inform the members of the tentative plans of one of our companies to develop a new mine and specifically to seek the advice and guidance of these knowledgeable and dedicated people on how these plans might be improved.

In a sense you might say we have taken, in the latter instance, a leaf from the book of the widely heralded "Experiment in Ecology" of our colleagues in Colorado.

The second reason, I think, we have so far no surface mined land reclamation law in Arizona is that the legislature not only knows that we are doing everything in our power to amend our effects upon the landscape; it knows also that writing a workable law to cover the tremendous variety of circumstances which exist within just the copper industry of Arizona alone would be extremely difficult. Add to that the problems accruing from the need to cover other types of mining, such as sand and gravel, coal, cement and all the others in existence or possible and you have a task so complex as to be nearly impossible.

Let me cite you only one example. In the Twin Buttes mining district there are two recently developed mines, Anaconda's Twin Buttes and Duval's Sierrita. They lie within about three miles of each other. Yet their problems of restoration and reclamation are entirely different. To uncover its ore body, Anaconda had to remove some 250 million tons of alluvial overburden. It used this staggering amount of material to construct eleven miles of earthen dykes; creating huge bays in which to impound the tailings from its milling operation.

These dykes are terraced to create roadways for the travel of vehicles and work crews in an extensive program to induce the growth of vegetation on the dyke faces. I'll spare you the details but sum up by saying the program today is eminently successful in making the dyke faces blend in with the surrounding desert. Indeed, not very long after the start of the effort, Anaconda was named the Arizona Conservation Organization of the year 1966 by the Arizona Game Protective Association, the National Wildlife Federation and the Sears Roebuck Foundation.

The neighboring mine, Sierrita, however, faced an entirely different set of circumstances. There was no such volume of alluvium over its ore body. From the beginning, Duval was blasting in hard rock, and even Nature has yet to devise means of inducing desert vegetation in hard rock. Thus, Duval has taken another, imaginative tack. It has constructed the bottom tier of its tailing dyke out of alluvium scooped from the desert floor and on it, vegetation has already been planted. Succeeding tiers will be built of tailing material, and the outside of each face will be covered with top soil, in which a cover of vegetation can be started.

The point of the example is that differences between properties, even so close to each other, are fundamental. Approaches to the problems of reclamation of the land must be basically different. Think then of the differences that exist between copper mines which are not only in different geologic formations, but which are in entirely different climate life zones. Then think of the differences between open-pit copper mines of the West and strip mines of the East. It would require a whole library of law to specify required reclamation practices.

And even then, a specific law could not be workable, for successful practices for each mine necessarily must be worked out by trial and error. Anaconda's outstanding success at Twin Buttes has been won only through the greatest flexibility, the ability to try and reject, try and reject until finally success has been achieved.

Therefore, gentlemen, our position in the matter is that the job can be done best by granting enlightened management the broadest possible freedom to get the job done at its own properties. This, of course, would suggest no legal compulsion or restraints. We have proved in Arizona this way works.

However, if the Congress is convinced there must be a law, then we urge most strongly that this law be the broadest possible, leaving to the individual states the obligation—and the commensurate authority—to see that the public's interest is served to the maximum feasible degree in that State. State authorities are in the best position to study closely the peculiar circumstances of each mining operation, to understand the efforts of each management, and to make suggestions for improvement based on the experience of others in similar circumstances.

It is doubtful that when intelligent, honorable men are working thus closely together in the common cause, there will be many occasions on which legal strictures will have to be enforced. However, we grant such occasions might arise, and it should be the province of the state to exert such authority.

In the remote event that a state fails to meet appropriate Federally designated guidelines, then Federal authority should step in and enforce these Federal minimum guidelines. The Federal government should assume the police function, however, only until such time as the state is ready and able to perform the function effectively, at which point the Federal government should retire and reassume the role of making sure the state continues to meet the guidelines.

Were such a Federal law in effect, I feel confident that Arizona would pass an appropriate state law. Meanwhile, whether or not such laws come into existence,

the copper mining industry of Arizona is pledged to continue the efforts which have made it the outstanding state of the Union in accomplishments in the area of open-pit surface-mined land reclamation and restoration.

We are convinced that those efforts have succeeded and will continue to succeed best with the minimum of legal compulsion and detailed direction.

We will appreciate your making this letter part of the Committee's hearing record on this subject.

Thank you.

Sincerely,

ARIZONA MINING ASSOCIATION,
EDWARD H. PEPLow, Jr., *Executive Secretary*.

STATEMENT OF ROBERT PEELE, REPRESENTING TENNESSEE CITIZENS FOR WILDERNESS PLANNING

I. TCWP'S KNOWLEDGE OF THE STRIPMINING PROBLEM

Tennessee Citizens for Wilderness Planning (TCWP) is a statewide organization formed five years ago to concern itself with issues pertaining to the State's land and water resources. Much of our emphasis has been on the preservation of natural areas, particularly in connection with free-flowing rivers and mountain wilderness. However, we have also expended considerable effort on a related field—the promotion of effective regulation of stripmining both at the legislative and administrative levels. We supported passage of The Tennessee Strip Mine Law of 1967, which is currently in effect. Since this law and its enforcement have proven quite inadequate, we have in the past year drafted and supported stronger, yet still moderate, state legislation. So far, this state effort has been disappointing, both at the legislative and administrative levels.

In connection with the state stripmine effort, TCWP has done considerable research. We have visited numerous stripmines (active, in various stages of "reclamation," and orphan mines) under the guidance of state or federal officials, or of local inhabitants, or on our own. We have obtained data on coal production and reserves, acres disturbed, persons employed, etc.) from appropriate government offices. We have consulted reclamation experts involved in two federal experiments (USFS and TVA). We have talked to local mountain people, to concerned persons in this and other states, to legislators, and to administrators. And we have studied proposed federal legislation, as well as laws operative in other states.

II. PRESENT CONDITIONS IN TENNESSEE COAL STRIPPING

Tennessee, which produces on the order of 10 million tons annually, is not among the major coal-producing states; but in the mountain counties of the Cumberlands, coal mining has a dominant effect on the land and on the lives of the people. More than half of our coal is surface mined, and the major portion of this surface mining is in the form of contour stripping and augering on steep slopes. From almost any vantage point in Tennessee's once beautiful Cumberlands, one now sees mountains torn up by long parallel gashes, as far as the eye can reach. This type of surface mining is the most susceptible to such environmental damages as landslides, serious erosion, and subsequent pollution of streams for great distances from the original disturbance. The probability of these damages occurring is increased by the fact that the region has a very high annual rainfall.

Three factors compound the seriousness of the situation. First, our state law is weak in many respects, e.g. it does not give the Commissioner explicit authority to deny permit, even in cases where it is obvious that reclamation is impossible, or that life or property are at risk. Second, even our weak law is poorly enforced due to insufficient funding. Thus, there are only three inspectors for all of East Tennessee's coal stripping. Thirdly, the pace of this essentially unregulated stripmining is now rapidly increasing.

Our continuing field inspections have indicated that, since the time of our recent unsuccessful attempts to strengthen Tennessee's state law and enforcement, the Cumberland Mountain creeks and rivers have become ever thicker with silt; innumerable new mountain sides have been ripped open and mountain tops have been literally cut off; hundreds of thousands of tons of earth have been pushed down the slopes; and many existing mine spoils have turned into land-

slides. We are convinced that if this damage is allowed to continue unabated, even for a short time, the Cumberland region of eastern Tennessee will soon be an ecological and human disaster area.

We should also like to point out the economic and social damages from mountain strip mining. This type of operation is taking place in what is one of the most scenic areas of the eastern United States. The stripping therefore leads to a virtually irretrievable loss of potential tourism resources. Water pollution ruins the scenic-river potential of streams for great distances from the operation and fouls the public water supply. Landslides have caused tens of thousands of dollars worth of road damage in each county in which major mountain stripping is going on, and have threatened private residences. We know of specific blast damage to several homes in at least two communities. We also know of flood damage and at least one drowning where water that had been in strip pits broke loose during heavy rains. Local citizens see their once beautiful and peaceful environment blighted and their creeks silted up by outside interests over which they have not the slightest control, and which give them no compensation. In fact, the stripmine industry produces very little local employment. Thus, a Tennessee Department of Labor report (for the year ending 6/30/70) indicates that only 692 men were employed in stripmining in the entire state, between 45 and 249 in each of the 6 counties that produced over 90% of the stripped coal. It has been shown that the great bulk of Tennessee's coal lands are owned by large land companies from other states and countries and that a sizable number of the major operators also are not locally based. Tennessee has no severance tax on coal, nor do property-tax assessments in practice reflect mineral values.

With regard to reclamation (the term being used here to denote grading plus revegetation) we encounter three main kinds of conditions: (a) Orphan mines, where there has been no attempt or pretense at reclamation because the mining was done prior to enactment of our state law, or was done illegally without permit, or was done by an operator who somehow avoided enforcement of permit regulations and is not subject to loss of bond. (b) Operations that are presumably in compliance with present state regulations. The great bulk of these show little or no evidence of proper grading or revegetation (perhaps as a result of the very stretchable time limits in our law, perhaps due to inadequate enforcement). Even in the few cases where the meager revegetation requirements of the law were initially met, the plantings are often showing signs of failure after the early establishment period and wherever a spindly seedling remains, it stands in isolation among the erosion channels or on the brink of an impending landslide. (c) Operations that supposedly conform to regulations enumerated in TVA's new contracts, which took effect in December 1970. Even though these regulations, which are altogether considerably more stringent than those of the state, specify a slope limitation of 28 as well as slope preparation prior to mining, several instances of unplanned earth movement have nevertheless occurred. The whole program is still largely experimental and demonstrational, rather than operational in any major way.

III. THE NEED FOR FEDERAL LEGISLATION AND ENFORCEMENT

Because of the ecologically, socially, and economically disastrous effects of most past and present strip mining in Tennessee, the fact that our present state law is ineffective in controlling this practice, the fact that reclamation has often not been attempted and, where it has, has usually failed, and, finally, the strong indication that the pace of coal stripping is continuing to increase rapidly—we feel a great urgency for immediate enactment of strong legislation.

Until effective federal legislation is passed, TCWP will not diminish its efforts on the state level to achieve stronger stripmine regulation. However, our experience and our recent research and deliberations have led us to conclude that strong federal legislation and enforcement are ultimately preferable for the following reasons:

(a) Federal controls remove the element of competition between states; i.e., states would no longer have to fear that by passing a stronger law they would be losing out to neighboring states with weaker laws.

(b) Federal controls remove the element of competition between large coal users, e.g., TVA and neighboring private utilities.

(c) A federal responsibility in the stripmine problem would presumably assure more funds for efficient enforcement, a greater certainty of effective punishment of offenders, and the utilization of expertise available in other government agencies.

(d) In its passage and subsequent administration, federal legislation is hopefully less subject to the type of industry manipulation we have witnessed on the state level.

IV. CATEGORIES OF CONTROLS REQUIRED

Any legislation supported by TCWP—state or federal—should have as its basic content (a) the complete and rapid prohibition of strip mining in certain terrains or under certain environmentally or socially defined circumstances; and (b) the strong regulation of all remaining surface mining.

We have concluded that on or near the steep slopes of eastern Tennessee and other parts of Appalachia, even the most advanced mining and reclamation techniques, applied in a conscientious way, have been inadequate or only barely adequate to preclude landslides, soil erosion, and stream pollution. On steep and even moderately steep slopes, we have seen no method that can prevent considerable permanent soil loss and permanent, severe ecological, esthetic, economic, and human damage. Even the slope limitations and mining preparations used under the new TVA contracts (much more stringent than our current state regulations) have been insufficient to prevent earthslides. Nothing prevents the scarring due to the persisting highwall. Moreover, the long-term effectiveness of reclamation procedures is unknown, and some eventual failures after initial limited success have already become apparent. We reject the proposition that our mountains continue to be the subject of a large-scale experiment which may give negative results.

It is therefore our opinion that stripmining should be rapidly banned from steep topography in the Appalachian Mountains and similar areas where truly effective regulation of mining and reclamation has proved practically impossible. The long-term value of this mountain resource is, in our opinion and that of Appalachia's people, too great for further sacrifice to short-term economic benefit.

While we are personally familiar with the ravages of mountain stripmining, we are aware that there may be other types of circumstances elsewhere that also make surface mining too undesirable to let its continuation be allowed. We believe that any condition of surface mining that would result in irreparable harm being caused to ecological or human values should be examined by this subcommittee.

Wherever surface mining is not prohibited, it should be strongly controlled by federal law. Such controls should pertain to site approval, pre-mining preparations, the mining procedure itself, and subsequent repair.

V. SUGGESTED PROVISIONS FOR FEDERAL STRIPMINE LEGISLATION

Based on our knowledge of coal mining in Tennessee, on our experience with state legislation, our research and personal contacts, and on our reading of pending bills, we believe that federal legislation should be passed now that contains at least the following provisions with respect to the surface mining of coal.

A. Provision for the rapid formation and development of the appropriate implementing body, so that prohibitions as well as effective regulations of mining and reclamation practices would be assured before the end of the calendar year 1972.

B. Immediate prohibition of new surface mining in the following areas:

1. on steep slopes, specifically those measuring more than 15 degrees from the horizontal between the undisturbed coal seam and the projected toe of the spoil bank;

2. anywhere where it would result in deposition of spoil on a slope of greater than 15 degrees from the horizontal;

3. under any other conditions where surface mining would result in irreparable harm to ecological or human values;

4. on federal lands and on state lands acquired with the help of federal funds.

C. Provisions for the rapid termination of on-going mining in the areas enumerated under B., above.

D. Regulation of all surface mining that is not prohibited under B., by giving the regulatory body at least the following authorities.

1. Authority to issue regulations controlling pre-mining, mining, grading, and revegetation procedures to assure minimal environmental damage. These regulations shall require the most rapid possible timetables for the completion of grading and revegetation of affected areas on an acre-by-acre basis. The regulations shall also prevent the occurrence of off-site damage such as may be caused by water pollution, earth movement, and blasting effects.

2. Authority to require that no surface mining be done without a permit or license subject to frequent review; and that the application for such a permit contain, in addition to other pertinent facts, a detailed mining and reclamation plan, including a time schedule for each phase.

3. Authority to deny permits in whole or in part where there is reason to believe that reclamation and revegetation of the area cannot be achieved in such a way that it will prevent off-site effects and assure a return to the productive land use stated in the permit application; where off-site blast damage cannot be avoided; where the proposed disturbed area is too close to a watercourse, or, if for any reason, pollution or siltation of watercourses cannot be avoided; where health and property rights of others would be impaired; where mining would result in destruction of esthetic values or of recreational areas; where mining would have an adverse effect on public lands or other property; or, where the operator or any of his associates have previously failed to comply with any surface mining law.

4. Authority to hold a hearing in the county of the proposed mining site prior to the granting of each permit. In this hearing, the applicant would be required to show how his mining and reclamation will be carried out in accord with regulations. Such citizen participation is needed because local persons bear the major burden of the damage and often have little effective access to legal remedies.

5. Authority to suspend a permit immediately upon finding of a serious violation; and to revoke a permit if investigation discloses noncompliance with the Act. For this and other actions, an adequate enforcement machinery must be set up, including frequent inspection, authorization for court action, and adequate penalties.

6. Authority to require filing of a bond that is adequate to cover reclamation requirements and is executed with proper surety. In addition, authority to levy any other fees that may be required.

7. Authority to regulate prospecting operations by requiring a permit for such operations and ensuring that they be subject to the same mining, grading, and revegetation regulations as are the major coal extractions themselves.

E. Specific provisions for the reclamation of those surface-mined areas for which no person is legally responsible (orphan mines).

F. Provisions for citizen class action suits.

The bill should contain the above features in mandatory rather than permissive language, since we do not believe the regulatory agency should be able to choose to neglect the intentions of the act.

We are concerned with results rather than with the administrative structure of the regulatory body. However, we feel that, of existing agencies, the task might be best handled by the Environmental Protection Agency. If any portion of the regulatory functions are left to the states, it will be essential to ensure that the bill refers to these functions *as enforced*, rather than *as written*. Federal inspection would be essential for this.

VI.—ANALYSIS OF PENDING BILLS

We have evaluated currently pending Federal legislation to determine its potential effectiveness in meeting the above requirements. The following mining bills had been introduced at the time of our analysis.

Bill number	Title	Sponsor
H.R. 5689	Mined Area Protection Act of 1971	Hosmer.
H.R. 4967	do	Harsha.
H.R. 7422	do	Perkins.
H.R. 4704	do	Broomfield.
S. 993	do	Byrd.
H.R. 60	Surface Mining Reclamation Act of 1971	Saylor.
H.R. 444	Mined Lands Conservation Act	Do.
H.R. 3299	do	Meeds.
S. 77	Mined Lands Restoration and Protection Act of 1971	Nelson.
H.R.	Strip Mine Control Act of 1971	Aspinall.
H.R. 10918	Strip Mine Control Act of 1971	Dent.
H.R. 10669	Coal Mining Regulation and Reclamation Act of 1971	Miller.
H.R. 6482	Strip Mining Reclamation Act of 1971	Hays.
H.R. 4556	Environmental Protection and Enhancement Act of 1971	Hechler.
H.R. 8174	do	Seiberling.

The weakest bills are those of Saylor (H.R. 60 and 444), and the "Administration" bills (companion bills H.R. 4704, S. 993, H.R. 5689, H.R. 4967, H.R. 7422). All are similar in that they allow for states to submit mining regulation plans

to the Secretary of the Interior within two years after enactment. Certain general regulation standards which these plans must meet are specified in the bills. If states fail to submit plans, Federal regulations will be issued and enforced by the Secretary of the Interior. Federal grants are made available to states for formulating and implementing regulations. H.R. 444 makes available grants to states for reclaiming orphan lands and authorizes federal purchase of orphan lands. The political philosophy on which the bills are based—that the Federal government should regulate only after state and local governments have failed in their responsibility—is in keeping with the admirable American tradition of local responsibility for local affairs. In this instance, however, adherence to this policy would simply mean sacrificing valuable natural and human resources to a political philosophy. First of all, the two-year waiting period is unacceptable in a situation where enormous damage is being done daily. In the second place, the State of Tennessee has already exhibited a dramatic failure in its responsibility to the land and the people. Furthermore, the Tennessee regulations now legally, if not actually, in force would probably be sufficient to satisfy federal requirements outlined in these bills. In short, the enactment of these particular federal bills would have no immediate impact in Tennessee, except for providing some Federal funds. We also tend to look with suspicion on regulation of the mining industry by the Department of Interior, which has long had a large mining constituency. For these reasons we cannot support any of these bills.

The second group of bills (H.R. 3299, S. 77, H.R. 10758, H.R. 10918, H.R. 10669) represents a potentially stronger adaptation of the regulatory approach embodied in the Administration bills. All of them authorize immediate federal formulation and enforcement of regulations covering mining. States may subsequently assume the regulatory task after getting federal approval of state regulation plans. Federal grants are authorized for developing regulation plans and for acquisition and reclamation of orphan lands. H.R. 3299, H.R. 10758 and H.R. 10918 authorize direct federal purchase of orphan lands.

Of these several bills we believe the Miller bill (H.R. 10669) and the Aspinall and Dent bills (H.R. 10758 and H.R. 10918) are the strongest. A law resulting from passage of the Miller bill would cover all coal mining, be administered by the Environmental Protection Agency (aided by an Advisory Committee), prohibit mining in the National Wilderness System and National Forests. Its specifications for federal rules cover adequately all key elements of regulation including prohibition "in areas where reclamation is considered ecologically or technically unfeasible". The Aspinall and Dent bills, which are identical, differ from the Miller bill in that the resulting law would be administered by the Department of Interior (with aid of a nine-member advisory committee consisting of three appointments each by Departments of Agriculture, Interior, and the Environmental Protection Agency), set a specific effective date (6 months after enactment), fix a higher bond (\$1000/acre vs \$500/acre) with detailed release procedures, and authorize direct federal purchase of orphan lands. While permit regulations are apparently strong the bill does not specifically require on-the-ground monitoring or inspection until application for release of bond is received. All features considered we believe the Miller bill (H.R. 10669) is the potentially most effective bill in the group, though it is weakened by lack of a specific implementation date.

The Hays bill (H.R. 6482) throws total responsibility for coal surface mining control into federal hands. It establishes a three-man presidential commission to formulate regulations and otherwise fix policy, and a directorate to administer them. The specifications for regulations are detailed and carefully thought out to avoid circumvention. Provisions are strong, especially with respect to grounds for permit-denial and prohibition of mining on areas subject to unremediable damage, including "destruction of aesthetic values." The bill prohibits surface mining on federal lands, makes provisions for federal purchase and reclamation of orphan mines, regulates prospecting in a manner similar to mining itself, and allows citizen class action suits. One major drawback that should be remedied is that the bill fails to set an early deadline for appointment of the Commission and for the latter's formulation of regulations and prohibitions.

The Hechler (H.R. 4556) and Seiberling (H.R. 8174) covering both surface and underground coal mining, represent the strongest and quickest solution to the surface mining problem. They simply ban all new surface mining, require that existing surface mining be terminated in six months, and set federal environmental standards for all deep mining. All coal mining is prohibited in areas designated under the Wilderness Act. To be administered by the Environmental

Protection Agency, the bills also provide for grants of up to 90% of cost to state and local governments for purchasing and reclaiming orphan lands. The bills contain adequate provisions for citizen class action; and penalties for violation are considerably stronger than in some other bills. The bills' one deficiency is that they ban surface mining in some areas where it may be environmentally feasible. European and American experience indicates that there are such areas, where strong regulation and high reclamation requirements are the answer, rather than abolition.

Of the bills available to us for review, in our opinion the Miller (H.R. 10669), Aspinall and Dent (H.R. 10758 and H.R. 10918), Hays (H.R. 6482) and Hechler-Seiberling (H.R. 4556, H.R. 8174) bills offer the best provisions for effectively and quickly controlling strip-mining. On the premises we outlined in Section IV, a law incorporating the best features of these four bills would represent the most desirable legislative approach. Thus the Hechler-Seiberling bills might be modified to make the surface-mining prohibition applicable to the circumstances we outlined in Section V. B. (i.e. operations on or near slopes of more than 15° from the horizontal). The Miller bill might be strengthened by incorporating more specific prohibition conditions and reclamation requirements along with the 6-month implementation time of the Aspinall bill. We believe that retention of the option of effective state regulation as incorporated in these two bills is a desirable feature. The Hays bill might be modified to include this feature and to provide for administration by the Environmental Protection Agency. Orphan land acquisition and reclamation via both federal grants to states and direct federal acquisition could be obtained by minor modification of any of the several bills.

SUMMARY

TCWP, an organization with considerable knowledge of stripmining in Tennessee, and with experience in stripmine legislation on the state level, finds the situation in Tennessee to be in urgent need of strong and immediate regulation. In our statement, we have described severe environmental, economic, and social damages that are threatening to turn our Cumberland region into an ecological and human disaster area.

Our state law is weak and poorly enforced, and extensive attempts to strengthen it have, so far, met with failure. The pace of essentially unregulated stripping is rapidly increasing. For these and other enumerated reasons, we feel that effective federal regulation should be immediately passed and implemented.

Our extensive studies lead us to the conclusion that on, or near, the steep slopes of Appalachia even the most advanced techniques now used are inadequate to prevent serious off-site damages. We therefore believe that federal legislation should include (a) the immediate prohibition of new stripmining, and rapid termination of existing stripmining, on slopes greater than 15° from the horizontal, or where spoil would be deposited on such slopes; and (b) the strong regulation of all remaining surface mining. We also advocate provisions for reclamation or orphan mines and for citizen class action suits. These various major provisions are outlined in greater detail in our statement.

Of the bills currently pending, those by Hechler and Seiberling (H.R. 4556, H.R. 8174), Hays (H.R. 6482) and Miller (10669), and Aspinall and Dent (H.R. 10758, H.R. 10918) contain features which can in our opinion effectively and quickly control stripmining. A law incorporating the best features of each would contain most of the provisions we consider essential.

STATEMENT OF CLOYD D. McDOWELL, PRESIDENT, NATIONAL INDEPENDENT COAL OPERATORS' ASSOCIATION

Mr. Chairman and Members of the Committee: My name is Cloyd D. McDowell, I am President of the National Independent Coal Operators' Association, an association of small coal mine operators located throughout the states of Virginia, Kentucky, West Virginia, Tennessee and Iowa. Our membership is composed of both deep mine operators and surface mine operators. I am also President of the Harlan County Coal Operators' Association and I reside at 403 Central Street, Harlan, Kentucky.

The small coal mine operator is relatively a new comer to the surface mining industry and many more have been forced into this field of operation recently

due primarily to his inability to operate economically under the present regulations of the Federal Coal Mine Health and Safety Act of 1969. However, where he has been successful in augmenting his underground production by strip and auger mining he has been able to stay in business.

Most surface mining in Eastern Kentucky, West Virginia and Virginia is known as contour stripping and auger mining due to the steepness of the slopes on which the mining is done. In most cases, however, the degree of slope is less than twenty-eight degrees and is regulated by state laws. In general none of these operations involve a large area and in most cases permits are requested for areas of five acres or less. After these small boundaries of coal are exhausted and the land is properly reclaimed then the operator may request additional permits for another surface mining operation. The advantage of this procedure is that the state is given an opportunity of judging the type of reclamation work that the operator can and will perform. If his reclamation work is not up to state standards then he is unable to secure an additional permit.

We believe that the states of Kentucky, Virginia and Pennsylvania have adequate surface mining laws and regulations now. If these are changed or overshadowed by Federal regulations, there will be a tendency of the Federal Government to over regulate and force the small operator out of business by requiring un-needed equipment and regulation procedures that would be impossible for him to comply with. This has happened in the deep mine industry and we have seen hundreds of our members close their mines and go out of business due to excessive costs and unnecessary regulations. One might say that this is the price of securing safer mining conditions. However, the facts prove otherwise for while these small mines are being closed the safety record gets worse day by day. We believe that this will also happen in reclamation. As the large operators take over the business putting even greater areas under one operation, the reclamation efforts, we believe, will become less and less effective.

A recent article in the Courier Journal of Louisville, Kentucky, dated September 9, 1971, illustrates the points I have tried to make. It states:

"The deep mining of coal—an industry through which Kentucky helped America build its industrial empires—is faltering in the crush of strip mine bulldozers. Competition from strip mining, combined with a weak coal market and a new safety law, has sent Eastern Kentucky's deep mine based coal economy into a severe slump. The Federal Coal Mine Health and Safety Act took effect in 1970, and in that year Kentucky's underground coal production was about the same as the previous year—63 million tons. Surface production that year rose by a startling 17.5 million tons to 61.8 million.

"This year the number of underground coal mines has dropped in every coal district except one, while the number of surface mines has risen sharply in every district. The Pikeville area has lost forty-seven deep mines and gained twenty-seven surface mines. The Hazard district has lost thirty deep mines and gained fifty-nine surface mines, and the Harlan coal field has lost forty-four deep mines while gaining thirty surface mines. The Martin district is the only one that has gained in underground mines. The district now has seventy-one more underground mines in business than last year, along with fifty-three more surface mines.

"The underground mining increase has come largely in the Floyd County portion of the Martin district. Surface mining is difficult in Floyd County and few permits are granted, but demand for the metallurgical coal produced there has continued stronger than that for utility coal.

"Western Kentucky, on the whole, has not been as deeply affected as the Eastern coal fields, but nevertheless has lost two deep mines while gaining twenty-nine surface mines".

Considering the problems we have been faced with in trying to comply with the Federal Coal Mine Health and Safety Act of 1969, I trust that you can understand our position when we urge this committee to limit Federal control of surface mining to the barest essentials. We have no objections to the concept of Federal guidelines for the regulation of surface mining but we believe that the states should be pre-eminent in the administration and control of surface mining. We believe this can be accomplished without the use of restrictive and inflexible laws and regulations which seem to create more problems than they solve. Most operators are willing to cooperate voluntarily with the government in protecting the environment if they understand what is expected of them and are advised as to the proper method of accomplishing it. We recommend that an

Advisory Board be set up by the Federal and State Governments to assist in working out Federal guidelines for surface mining and to initiate programs for improving surface mining methods to minimize the effect of these operations on the environment. Should such a Board be considered we believe that the law should specifically include representatives from the small mine industry.

We do not feel that surface mining legislation should contain provisions to control or limit underground mining. Underground mining has not caused surface disturbances to any great degree and state regulations covering this aspect of mining are adequate in our opinion.

To conclude my remarks I urge that any legislation recommended by this Committee contain proper safeguards against the economic destruction of the small coal operator by providing adequate time to comply with the law. He should be given the opportunity of being heard and allowed alternatives in reaching the objectives sought by such legislation. We further believe that the operator should be given a fair and impartial hearing of any alleged violations and he should be given the right of appeal with the right to judicial review by the courts.

If proper thought and effort is given to the drafting of this legislation I am sure that a reasonable bill will be adopted by this committee and I believe a majority of those in industry will voluntarily meet or exceed the goals sought by such legislation.

Thank you for this opportunity to express our views, Mr. Chairman.

STATEMENT OF WILLIAM H. MIERNYK, BENEDUM PROFESSOR OF ECONOMICS AND DIRECTOR, REGIONAL RESEARCH INSTITUTE, WEST VIRGINIA UNIVERSITY

(The following statement is an excerpt from a paper, "Environmental Management and Regional Economic Development," presented by the author to a joint meeting of the Southern Economic Association and the Southern Regional Science Association, Miami Beach, Fla., Nov. 6, 1971.)

THE SPECIAL CASE OF SURFACE-MINED COAL

West Virginia is the nation's largest producer of coal, accounting for almost one-fourth of the nation's total output in 1970. More than 80 per cent of West Virginia's coal came from underground mines, but about 19 per cent was produced by strip and auger mining. Nationally, almost 45 per cent of all coal produced in 1970 came from strip and auger mines.⁷

The issue of strip mining has become a hotly controversial one, and it has spread far beyond the borders of Appalachia. Defenders of strip mining claim that it is necessary to use this method to meet the rapidly increasing demand for coal by the burgeoning electric utility industry. They also claim that with proper reclamation there need be no lasting environmental damage.

Conservationists and others who oppose strip mining hold that "effective" reclamation cannot be achieved at costs that would permit strip mines to compete with underground mines if reclamation costs were internalized to the firm. They argue that the profitability of strip mining is attributable to the fact that the social costs of this industry are high.⁸ Some ecologists maintain that strip mining damages are so extensive that "effectual" reclamation is a complete illusion. The basic problem is that when the overburden is removed to expose coal, sulfur pyrites are brought to the surface. When exposed to air and water these pyrites produce acid drainage that may lead to widespread damage to the watershed that is being strip mined. The severity of the damage increases with the steepness of the slope of the land being disturbed. Much of the strip mining in West Virginia takes place on steep slopes. The resulting highwalls disfigure the landscape, and the overburden which is pushed over slopes cannot be recovered during attempts at reclamation. The result is long-term acid drainage to nearby streams, and the siltation of these streams. Because of the extensive environmental damage that has already occurred, attempts have been made at both the state and national levels to outlaw strip mining. What would be the economic effects of such a ban at the state level? Would the underground mining sector

⁷ National Coal Association, *Coal News* (Sept. 3, 1971), p. 2.

⁸ For a good summary of the conservationist position see Richard Cartwright Austin (ed.), *The Strip Mining of America*, New York: Sierra Club (July 1971).

be able to produce enough additional coal to offset the loss of surface mine? What would happen to employment and investment in coal mining as a result of this shift?

The answer to the first question depends upon the availability of recoverable reserves. The West Virginia Department of Mines estimates that there were more than 58 billion short tons of recoverable coal in West Virginia in 1970. The total reported production of coal in this state between 1883 and 1970 amounted to 7.8 billion tons. Thus production during the past 87 years accounted for about 13 per cent of recoverable reserves. Even at a much higher rate of output, there are enough known coal reserves to permit a rapid expansion of underground mining without imposing serious strain on the state's reserves of coal.⁹

The questions that deal with the employment and investment effects of a ban on strip mining—with a compensating increase in deep mining—can be answered by the input-output model. The following steps were taken to estimate these effects: (1) the production of West Virginia coal was projected from 143 million tons in 1970 to 175 million tons in 1975; and (2) the input-output system was solved to obtain projections of employment and investment in 1975 based on the technological conditions that are expected to prevail in that year.¹⁰ The output projections are summarized in Table 1. The West Virginia table has forty-eight endogenous sectors, but these have been aggregated to eleven sectors for purposes of this comparison. The specific effects of the switch from strip to deep mining are given in this table.

All of the figures are in 1965 dollars. Since we have assumed that the increase in deep mining would offset the loss of production from strip mining there is a net change of zero, but some sectors would gain, and others would lose. The largest decline—excluding the composite "all other" sector—would be in the mining industry itself, because of the large volume of intraindustry transactions in surface mining. The largest gains would be in manufacturing, especially durable manufacturing, and electric utilities.

We have estimated that 47,201 workers would be employed in deep mines if there were no strip mining in 1975, after taking into account the employment effects of changes in productivity. Making the same adjustments, but with both strip and deep mining in operation, estimated total employment would be 48,838. Thus if strip mining were abolished in West Virginia, with strip mine production taken over by new deep mines, there would be an indirect decline in employment of 1,637 workers, or 3.35 per cent. All of the decline in employment—as a result of the shift in production on current account—would take place in the intermediate sectors of the input-output table, with most of the decline concentrated in the mining sector. Although deep mining uses more labor than surface mining as a *primary* input, surface mining uses more labor in its interindustry transactions. This is because many surface mining operations are relatively small, and do not enjoy the economies of scale realized by large underground mines. Only construction and manufacturing—especially durable goods manufacturing—would show an increase and here the changes are not large. The largest increase in employment as the result of a shift from strip to deep mining would be in primary employment (the household row of the input-output table). This is not surprising since even after adjustments due to technological progress have been made, underground mining still requires a substantially larger number of workers per ton of coal mined than surface mining.

The shift from strip to deep mining would have other employment effects than these described above. An increase in deep mine production of the magnitude projected would require a major increase in capital spending, and this would have the employment effects given in the second column of Table 2. The two sectors that would benefit most from the shift in capital spending are construction and durable manufacturing. More than two thousand new jobs would be created in these sectors as a result of the *net* change in capital spending. The modest drop in employment on current account would be more than offset by the

⁹ As energy production continues to expand, an increasing fraction of total energy will be generated by the use of oil, gas and nuclear fuels. See Chauncey Starr, "Energy and Power," *Scientific American* (September 1971), p. 39. During the coming century the world will have to rely less on fossil fuels and increasingly on nuclear energy. By the time fossil fuels are in short supply the technology of controlled fusion—which is safer and cheaper than the use of breeder reactors—should be perfected. On this see George L. Weil, *Nuclear Energy: Promises, Promises* (Washington (1971), pp. 26–32.

¹⁰ The projection of technical change in West Virginia is discussed in Miernyk, *et al.*, *op. cit.*, pp. 27–34.

increase in employment on capital account. While the gain is not large, it is a gain. And this is significant since defenders of surface mining have made widely publicized estimates of the large-scale job losses that they claim would result from the abolition of surface coal mining.

The net effects of the shift from strip to deep mining on capital spending are given in Table 3. Much of the capital equipment used by strip miners is highly mobile, and none of the heavy equipment is produced in the state. As a result there would be a marked increase in production on capital account in West Virginia.¹¹ Once again, some sectors would gain and other would lose, but on balance there would be a substantial increase in capital spending within the state. The increase in expansion capital would amount to \$55.2 million, and there would be a gain in replacement capital spending of \$3.3 million. In addition, Table 3 shows that there would be a substantial increase in capital imports.

The analysis thus far shows that the economic effects of a shift from surface to deep mining in West Virginia would be beneficial. Several industries—notably construction, stone and clay producers, and non-electrical machinery—would benefit from the shift. More important, however, the shift would internalize a substantial part of the social costs of mining coal.¹²

Up to this point the discussion has not touched on the issue of economic development to which we now turn. This issue has been obscured by some defenders of surface mining who have related the economic benefits of strip mining to those that might have been achieved if the strip-mined land had been used for tourism. They correctly point out that the strip-mined sites rarely lend themselves to the construction of tourist facilities. But the weakness of this argument is that it considers alternative uses for specific pieces of land only. The argument sets up a straw man that defenders of strip mining can easily demolish. The important point is not that strip mining might weaken the tourist potential of the state—although this is almost certain to be true—but rather that the environmental damage from strip mining may undermine (no pun intended) the entire regional economic development effort.

The most important single activity of the Appalachian Regional Development Program has been construction of the Appalachian Development Highway System. The system was designed to link the by-passed areas of Appalachia to the rest of the economy. The decision to allocate the Commission's resources in this way was based on the premise that improved transportation facilities would stimulate economic development. A further assumption is that one of Appalachia's major locational advantages today is a lack of congestion and ready access to wilderness areas. Urban congestion has caused a growing number of businessmen to look outside the nation's major urban areas when considering plant expansion. The availability of outdoor recreational amenities in Appalachia could provide a strong attraction for many types of footloose economic activities, when the amenities are coupled with a good transportation system.¹³

The continued expansion of strip mining in West Virginia could easily offset the developmental impact of the Appalachian Highway System. Strip mining as a form of environmental damage is unique in a number of respects. It is more localized than air or water pollution, and it is more a regional than a national problem. The effects of strip mining on economic development will vary from region to region. In the four-corners area of the Southwest, for example, the availability of relatively low-cost, surface coal attracted the power plants now operating or under construction in that area. Coal in the Southwest is too close to the surface to be mined by underground methods; it either must be stripped or remain unused. In other regions, however, and West Virginia is an outstanding example, abundant reserves of both surface and underground coal permit choices to be made. Since coal can be obtained from underground mines economic activities such as electric utilities can be attracted to coal sites without the environmental damage resulting from strip mining. In Appalachia, therefore, there need not be a trade-off between the control of strip-mine damage and regional economic development. Indeed, the reverse will be true. This is a case

¹¹ The fact that deep mining uses both more capital and more labor per unit of output than surface mining is further evidence—if such evidence is needed—that the social costs and profits of strip mining are high.

¹² Not all of the social costs would be internalized since there are some social costs associated with underground mining particularly the costs of mine-acid drainage. This problem will be considered in a later phase of the present study.

¹³ A combination of recreational amenities, an unspoiled environment, and good transportation largely explain the rapid development of the "front range" area of Colorado in recent years.

where management of the environment should stimulate long-run economic development, if the basic premise upon which the Appalachian Development Highway System has been built is valid.¹⁴

STATEMENT OF GROVER C. LITTLE, JR., SOUTHEAST REPRESENTATIVE OF THE IZAAK WALTON LEAGUE OF AMERICA

Mr. Chairman: I am Grover C. Little, Jr., a member of the national staff of the Izaak Walton League of America serving as southeast representative with headquarters in Kenova, West Virginia. I also hold the office of executive director of the West Virginia Division of the League. I appreciate the opportunity of appearing before this committee.

With me today are Norman S. Williams and David A. Schneider; together we form the League's ad hoc committee on strip mining in Appalachia. Mr. Williams formerly served as deputy director of the West Virginia Department of Natural Resources and is now employed as executive director of the Mid-Appalachian Environmental Service which is based in Charleston, West Virginia. He has been a member of the Izaak Walton League in West Virginia for several years. Mr. Schneider is an attorney-at-law with offices in Covington, Kentucky. He formerly served as assistant attorney general for the Commonwealth of Kentucky and is recognized as the father of the strong Kentucky strip mine law adopted in 1966. He is well remembered in Kentucky for his courageous enforcement of the law during his tenure in office. He is the immediate past president of the League's Kentucky Chapter.

I was born in Mingo County, West Virginia and have spent my entire life as a resident of southern West Virginia and Appalachia. The roots of my family, on both sides, were planted deeply in the heart of Appalachia when the earliest settlers moved into the mountains of western Virginia, eastern Kentucky and southern West Virginia. Nearly all of them later became coal miners and raised their large families in an atmosphere of happiness or sorrow alternating always with the source—"what happened at the mine." Some perished in the all too frequent mine tragedies and others suffered from chronic respiratory afflictions; but the beauty of the mountains, made up of green valleys and clear mountain streams and covered with the world's finest hardwoods, was enough to excuse the hardships and heartaches of mining and retain their love and loyalty. Simple people with a simple request—to have a place of beauty and happiness where their children could grow and prosper. This legacy is not to be, for the shadow of strip mining is on the horizon and the heritage of thousands yet to be born is destined to be trapped and destroyed between the dozer and the shovel.

Since the early nineteen-fifties I have pursued the strip operator in central and parts of southern Appalachia. I have walked the ridges and hollows of the region visiting and talking with people disastrously affected by strip mining; appeared in numerous legislative and public hearings; worked with several legislative bodies, governors and other public servants as well as with resource agencies dealing with strip mining. I have assisted in drafting guidelines for proposed legislation in various states and had a primary role in my own state's move to adopt stringent regulations and controls governing strip mining. The observations and conclusions that I have derived from this background of experiences have not accumulated overnight but have survived the elimination of other conceptions as the pace of strip mining accelerated rapidly in the region.

In 1959 I joined the Izaak Walton League of America, a nationwide conservation organization that was showing considerable interest in doing something to help contain strip mining in our region. During the past several years our state divisions and local chapters have been active at the local and state levels helping to achieve regulations for the first time in some states and to strengthen existing

¹⁴ Some ecologists have argued that there is an inconsistency between the view that the Appalachian highways will stimulate the economic development on the one hand, and that strip mining will retard such development on the other. They feel that both cause environmental damage. Superficially, there may be some resemblance between highway construction and strip mining, but there are important differences. First, and perhaps most important, strip mining exposes sulfur pyrites to air and water. As a rule this does not happen in highway construction. It is the acidity of the soil and the steepness of slopes that makes the reclamation of strip-mined lands so difficult, and the damage of strip mining so extensive.

laws in others. After years of observing contour stripping (mountain and hilly slopes) and efforts, mostly futile, to restore the land, the national organization passed a resolution at their national convention held in Norfolk, Virginia, that in effect would abolish contour stripping. This action followed similar decisions by the Kentucky and West Virginia Divisions.

The outcrops of coal on the mountainsides of Appalachia are the major sources of our concern, but not the only reason for alarm. In the issue of the Washington Post dated June 1968, there appeared an item entitled "That's Gold in the Hills of Appalachia." The news article went on to state that

"from southern New York to Georgia, Appalachia struggles with poverty and human deprival, but the ground itself, rugged and hilly, is a treasurer-house. There is potential for gold . . . there is iron and copper. Coal, oil and gas abound. Copper deposits lie everywhere. The region has one-tenth of the known and potential sources of bituminous coal in the nation, reserves of crude oil total 376-million barrels. And proved natural gas reserves come to about 5½ trillion cubic feet. In one year recently Appalachia produced 137,000 tons of zinc and the potential for discovery of new deposits is believed to be excellent. Iron ore resources also are large."

The report ends by stating, "The very surface of the hills are usable." (e.g. in reference to the abundance of high silica sand, top quality limestone, fire clay, rock salt and mica.)

My first thought on reading this news item was "and then there's the people." Secondly, I thought about a highlander in eastern Kentucky who had gone to court to protect his right as a property owner when coal companies started stripping the land. Remarked the judge: "I deeply sympathize with you and sincerely wish I could rule for you. My hands are tied by the rulings of the Court of Appeals and, under the law, I must follow its decision. The truth is that about the only rights you have on your land is to breathe on it and pay the taxes. For all practical purposes, the company that owns the minerals in your land owns all the other rights pertaining to it." (Kentucky broad form deed). Thirdly, the thought that we haven't as yet stopped the ravages of strip mining made the thoughts of all the other minerals subsurfaced in Appalachia very frightening indeed. Finally, I acknowledged to myself that, in our region, to teach our children we are a part of a biological community and we must learn to live within it, not master it, is perfectly ridiculous!

While I am here representing a particular region defined within the organization that I serve, I am fully aware that not all the problems generated from surface mining are in our area. In Ohio the giant earth movers, the Silver Spade, the Gem of Egypt, the Big Muskie, are disturbing vast areas of land as the overburden covering rich coal deposits is removed with buckets that hold 175-220 cubic yards. Except for company showcases, little bragging can be done about land restoration in the Buckeye State. By 1965 approximately 213,000 acres of Ohio land had been disturbed by strip mining coal. It is estimated that now the figure exceeds 275,000. While the states of West Virginia, Kentucky, Indiana, Pennsylvania, Ohio and Illinois have absorbed the greatest land disturbances from strip mining, the vast coal reserves in the Dakotas, Montana, Wyoming, New Mexico and Texas mean that these states can expect heavy strip mining in the not too distant future—and from a restrictive and regulative standpoint, all are woefully unprepared to face the onslaught.

In my own region only the states of Kentucky, Pennsylvania and West Virginia have laws with any teeth, and in my conclusion, these are evaluated. I understand that the state of Ohio, during the past two weeks, has adopted legislation greatly strengthening their strip mining statutes. Two years ago Maryland ungraded their laws somewhat and Virginians are trying to do the same thing in their legislature now. Alabama has no law and the same is true for North Carolina (they tried but failed in the last session of the legislature). Tennessee's regulations are relatively young and weak, and judging from William Greenburg's articles in the Nashville Tennessean, September 1971, strip mining is leaving a trail of "wanton ruin" in the eastern part of the state.

Two years ago at the request of our national office I reviewed most of the state laws in existence—these were sent to me by local chapters located throughout the United States. In general, the laws were a far cry from legislation necessary to regulate and control strip mining to any appreciable degree; in fact, only in six states, as I recall, was the language forcible enough to make any impact on the stripping industry. And in these states some were without rules and regulations necessary to implement their laws. The great majority of the state laws

that I reviewed were extremely weak, relying on the voluntary efforts of the industry to show results. Mainly, such laws provide propaganda material and public relations for the industry rather than protecting the public interest. The language in most of the laws would parallel that of my own state about twenty years ago, and seeing the current destruction in West Virginia today is a look into the future for those states just beginning to face the issue of strip mining. Double or even triple the environmental degradation in my state and you will be prophetically close to the real picture that lies ahead for those states.

We should remember that the need for state controls was recognized about thirty years ago, and since that time, barely a handful of states I have mentioned have adopted or strengthened laws worthy of note. In some instances industry supported those efforts, to some degree at least, to strengthen the laws; but all too often every little item of improvement was strongly opposed by an alliance of related industries and associations whose repetitious cries of woe extended from state to state as stronger controls were proposed. Such unreasonable opposition has greatly retarded the establishment of laws by individual states and has perpetuated the accumulation of a vast acreage of derelict lands across America. In my opinion the federal government must move *now* and insert itself, in the strongest possible manner, into the issue; *now*—else the “inch-by-inch tug-of-war” will allow devastation of the land tenfold that of the past, and in a much shorter period of time.

In May 1968, this senate committee held hearings on the subject of surface mining in America. I submitted a statement following the remarks of the assistant conservation director of the League. At that time the newly adopted and well publicized West Virginia Surface Mine Act was just a year old; and since the law had the benefit of the better language from both the Kentucky (1966) and Pennsylvania (1964) laws, it deserved to be called and was referred to as the most stringent surface mining legislation in the Nation. We had the benefit of hindsight for we could review the Pennsylvania record after the third year of the law's existence, and some of the more wayward segments of the industry had already received a bloody nose; the year old Kentucky law was beginning to look good for that state. So it is understandable that in our statement we requested the federal government not to intervene in those states where strong laws existed *if they were enforced*. My emphasis is on enforcement because, as it turned out, this became the Achilles heel of the West Virginia law. Today, and once again with the benefit of hindsight, I am suggesting that only the federal government has the “muscle” to deal forcefully with the strip mining industry from an enforcement standpoint. This does not rule out any possibility of a working relationship with the states if the Congress so chooses that course; but if we are to have enforcement of strip mine laws that is something more than a myth, the full resources of the federal government are required. The politico-economic strength of the industry is overpowering and most often state agencies are forced to knuckle under to their whims; a sustained David and Goliath effect is too much to expect.

If we are to speak of *strong laws*, it is necessary to define what is meant by the term. Again I refer to the West Virginia Act for I believe as originally enacted (it was weakened by amendments in the 1971 session of the legislature) it provided for *preventive* measures as well as regulation.

Mr. Williams, while testifying before the West Virginia State Legislature in February, described the strength of the law very ably, “. . . it is my belief that most of these environmental costs of strip mining could be placed back upon the operator, as the law intended. . . . If, however, the State rigidly enforced the full intent of the law, I believe the operator would be put out of business. . . . *another way of putting it is to postulate the following truism: The profit of the strip mine operator is in direct proportion to the environmental costs he is allowed by the state to pass along to the community.*” The West Virginia law, as enacted, placed the public's interest, the welfare of the individual citizen, and the ecological values of the state first, before consideration was given to the stripper's financial welfare. It is obvious that such was the case as a brief review of events will show.

As a member of the Governor's Task Force on Strip Mining in 1966 I recall vividly the bitter fight we experienced with the coal industry as we attempted to get the necessary language into the law that would provide the features that I mentioned a moment ago. This bitter argument extended through the year of 1966 when the Task Force was meeting and formulating guidelines for writing into law and into March 1967, when on the last day of the legislative session, representatives, favorable to the industry's position, submitted 72 separate

amendments in a grand effort to sabotage the bill. They were unsuccessful on each and every count and the bill became the law of the state. We were soon to learn that getting a strong law was one thing—keeping it was quite another.

The law directed the director of the Department of Natural Resources and his staff to proceed with drafting regulations and rules that would fully implement the intent of the law. It was at this point that deceptive hands of a major conspiracy began to rob the people of West Virginia of their victory sustained in the halls of the West Virginia Legislature. To get quickly to the point, the rules and regulations put into effect were not consistent with the intent of the law and permitted flexibility very favorable to the industry. This permissiveness along with a later major concession to the industry (weakening of the rules-regulations) coupled with some ruinous amendments to the law and an astonishing silence from the governor's office is proving catastrophic to West Virginia. Collectively, it has perpetuated an epic of tragedy.

Mr. Chairman, my brief description of what I believe to be the situation in my own state, in my opinion, can not be isolated to West Virginia. Throughout Appalachia it has been confirmed to a substantial degree by persons in high authority and citizens affected that similar situations plague their state's efforts to do something to contain strip mining. I have been emphatic with my suggestions that the federal government intervene with stern measures because I feel the situation worsens by the hour. In Harry Caudill's book, *Night Comes to the Cumberlands*, is the line, "... the hour is late and the agony of the land is intense." I might add a few words to that to the effect, "and the patience of the people is exhausted."

I have reviewed most of the bills now before this committee and I find that most treat the situation as it was three to four years ago. This is not the case. I point out that during the hearings of 1968 we were not faced with the lucrative markets for coal that exists today. Strip operators now remove overburden and strip coal at depths considered economically unfeasible three years ago. Highwalls are higher, pits deeper, spoil banks more extensive and steeper; and, as the magnitude of these environmental insults are compounded, remedies become more difficult and solutions more allusive. Time is of the essence. Mother Nature is often slow to rebel but she has, and in this instance her response may well be final for generations to come.

It has not been my purpose here today to decipher the strong and weak points of each individual bill under consideration by this committee. Rather, I have tried to describe the severity of the situation as I see it. Most of the bills that I have reviewed have some good points and collectively contain answers to some of the problems that confront us. S. 2455 hits at the core of the problem in its definition of "reclamation" or "reclaim": "... means the process of restoring an area of land affected by strip mining to a condition that it may be used for at least the same purposes for which it was used prior to the beginning of strip mining." Other bills give particular federal agencies the power to refuse strip mining permits where the agency feels that the area would suffer social-environmental costs too great to absorb. In both instances the federal government is placed in the role to some degree of preventing strip mining. In my opinion this is the major role the federal government should play. *Prevention* partially or totally certainly can be justified on the basis of the vast despoilation of the land that is present today, and more so in the light of increased strip mining that lies ahead.

Indirectly the U.S. Senate took a giant step toward preventing strip mining when it recently voted by an 86-0 count to prevent any pollution of our waterways after 1985. Strip mining heavily pollutes our streams in various ways and according to documented evidence, that I am sure is now in the possession of this committee, there presently exists no way of preventing pollution from strip mining.

Mr. Chairman, I would be remiss if I failed to point out that strip mining damages go beyond the tangible effects to individual Americans. In my region it is leaving many people with an empty, depressing and purposeless environment, and this in effect dims their desire for dignity and leaves them with little opportunity to enhance their chances for a good living as well as social and spiritual advancement. In the west the lands of the Hopi and Navajo Indians are being stripped. William E. Blundell writes in the *Wall Street Journal* (April 13, 1971):

The old Navajo believe that Black Mesa is the body of the Earth Mother and that the power shovels are damaging it cruelly; the traditional Hopi, who have shrines on the mesa and consider themselves stewards of all the land here, say the mining is a desecration. They also believe the pumping of well water from below

the mesa for the Slurry pipeline that carries crushed coal to Mohave, threatens their farms; these are the washes on the south side of the mesa near the villages where they live.

The most ancient of these is Old Oraibi, which has been continually settled since at least 1150 and possibly long before. Its chief is a diminutive but spirited old woman named Mina Lansa, who has no use for Peabody royalties paid her tribe. "What is money? It comes quickly and is quickly spent and gone," she says. "But the land is there forever. What good is money compared with land? If it is torn up, and if the water is taken, our people will starve."

As a member of the Governor's Task Force on Strip Mining (West Virginia) I well recall Governor Hulett C. Smith's (then Governor of West Virginia) opening remarks at our initial meeting of the task force. He said, "The rape of West Virginia has occurred." God forbid that someday, in the not too distant future, the President of these United States will be forced to say to the American people, "The rape of America has occurred."

Thank you, Mr. Chairman, and members of this committee, for this opportunity to present my views on strip mining.

STATEMENT OF NATIONAL CLAY PIPE INSTITUTE

The National Clay Pipe Institute supports the concept of the regulation of surface mining and the reclamation of surface mined areas, as proposed in S 630, "Surface Mining and Reclamation Act of 1971".

The National Clay Pipe Institute represents the majority of the manufacturers of vitrified clay pipe, a quality material widely used in the construction of water pollution control facilities throughout the United States. The raw material is surface-mined in those areas where it is found in sufficient quantity in twenty (20) States of the United States. Seven of these States (Georgia, Illinois, Indiana, Iowa, Oklahoma, Kentucky, and West Virginia) have enacted surface mining laws affecting the mining of our materials. We would welcome nationwide State legislation of a uniform nature, modified to recognize natural diversities, as envisioned in the proposed legislation, S 630.

As described in "Surface Mining and Our Environment", a special report of the Department of the Interior (1967), the surface mining of clay disturbs the least percentage of the land of any of the materials identified in the Report (p. 53), based on 1965 figures (Appendix I).

Although precise updated statistics are not available, it is fair to assume that there has been a further diminution in that percentage for the following principal reasons:

(a) There has been a reduction in the number of clay-manufacturing establishments since that period

(b) The average working clay pit will be consumed for several years with no significant increase in area before becoming worked out, and

(c) Worked-out clay pits lend themselves well to and have in fact been reclaimed as sanitary landfills and recreation areas.

The foregoing is not stated as a plea in mitigation for any damage which we may have visited upon the land, but merely to identify the current factual situation. Our industry is prepared to do its part throughout the United States in the improvement of mining methods whereby prudent reclamation of used areas is encouraged and required. We support the fundamental purposes of this legislation (S 630) because we believe it can result in better mining practices in all of the States, at the same time eliminating the invidious competitive features of the few existing State laws. Passage of State legislation where none now exists in the regulation of surface mining and in reclamation will introduce some additional costs in our final product. We believe that such costs, under the terms of S 630, would be reasonable and should be a part of the cost of doing business.

In an effort to be constructive, we offer herewith several recommendations which we believe will foster the aims of S 630, while simplifying certain administrative features thereof.

COMMENT

Section 7(a)(1)(C).—Perhaps it is inherent in the review authority being granted to the Secretary that he would be forced to establish federal standards and guidelines before ruling on the adequacy of State plans. It would seem pru-

dent to state this as a requirement in the legislation to remove any possible ambiguity arising from the discretionary power of Section 11. Moreover, specifying that the Secretary must establish standards in advance would be of inestimable help to those thirty-seven (37) States which have no surface mining laws. It also would be helpful to those thirteen (13) States which do have such laws, but which in fact make no reference, for example, to "the prevention of air pollution by dust . . .".

Recommendation #1.—Revise Section 7(a)(1)(C) to read as follows:

"(C) contain, in connection with surface mines and surface mined areas, criteria compatible with federal standards as promulgated by the Secretary and relating specifically to (1) . . .". Underlining supplied to represent additional proposed new wording.

COMMENT

Section 13.—The strong discretionary authority granted to the Secretary to seek injunctive relief should be weighed alongside the other possible penalties described in Section 13. By and large, the activity to be punished herein is of a commercial character, devoid of criminal malice. It is so recognized by the majority of the States. Heavier fines, with elimination of the unlikely-to-be-enforced imprisonment threat, are recommended.

In addition, to establish the certainty of "notice of failure" in Section 13, we recommend that the wording should identify the fact of receipt of notice in anticipation of a routine defense.

Recommendation #2.—Revise Section 13(b) to read as follows:

"(b) Any person who knowingly violates any regulation issued pursuant to Section 8 of this Act shall, upon conviction, be punished by a fine not exceeding \$10,000 for each and every such violation."

Recommendation #3.—Revise Section 13(a) to read as follows:

"(a) If any person shall fail to comply with any regulation issued under Section 8 of this Act for a period of fifteen (15) days after receipt of notice of such failure . . .". Underlining supplied to represent additional proposed new wording.

IDAHO MINING ASSOCIATION,
Boise, Idaho, November 13, 1971.

Hon. FRANK E. MOSS,

U.S. Senator, Chairman, Mineral Material and Fuels Subcommittee, Senate Interior and Insular Affairs, Washington, D.C.

DEAR SENATOR MOSS: The Idaho Mining Association takes this opportunity to submit to this committee its comments relative to S77, S630, S993, and S2455, pertaining to the regulations on mining and the environment.

The association has carefully reviewed this proposed legislation and is deeply concerned with many of its provisions.

It is noted that there are no standards establishing limits as to what may be required or prohibited; the bills state that their intent and purpose is to prevent and eliminate adverse environmental affects of mining which if taken literally would prevent all future surface mining; the provisions of these bills may be applied retroactively to areas affected by mining prior to their effective date; broad discretion is given to the administrative agencies; authorization without guidelines is given to prohibit mining; Criminal sanctions are arbitrarily imposed and a right of appeal of agency decision is not guaranteed.

The aforementioned problems posed by the pending legislation are documented and set forth in detail in the statement of the Phosphate Lands Conference which is to be presented to this subcommittee.

While the conference statement would apply primarily to the western phosphate mining industry, the problems and reasons contained in the conference statement would be applicable to all mining. The association, therefore, endorses and supports in full the comments and recommendations set forth in the statement of the Phosphate Lands Conference.

In 1970 the Idaho Mining Association cooperated with the Idaho Legislature in the development of legislation pertaining to mined land reclamation which was ultimately adopted. This legislation, while it does contain some problems, nonetheless provides adequate provisions for the protection of the environment and avoids most of the problems posed by the legislation under consideration by your committee. It is essential that any legislation enacted contain standards and limitations to govern the authority of administrative agencies.

The Idaho Mining Association, based on its experience, believes that it is possible to eliminate the problems posed in this pending legislation without impairing its effectiveness in achieving its intended objective of assuring mined land reclamation. The association would be willing to work with this committee to develop such legislation.

Respectfully submitted,

A. J. TESKE, *Secretary.*

STATEMENT OF COLORADO MINING ASSOCIATION

The Colorado Mining Association is a voluntary organization representing over 600 mineral operations and mineral fuel locations, both large and small, in Colorado. We appreciate this opportunity to submit our views on pending legislation to regulate surface mining and reclamation of mined lands. We are quite concerned as to the possible crippling effects, of unduly strict regulations. Our views are limited to a few general comments and recommendations.

Initially, we want to call attention to the fact that as of 1965, the United States Bureau of Mines estimated that surface mining in the United States had disturbed approximately 1/7th of one percent of the Nation's total land area (see the U.S. Department of Interior publication, "Surface Mining and our Environment"). Of the acreage represented by this 1/7th of one percent figure, only two-thirds requires reclamation. For comparison, if has been estimated that urban areas cover about 7 percent of the Nation's land and just over 50 percent is considered to be agricultural land. At least 1/4 of our urban areas are unsightly slums or 15 times the area affected by mining. Twenty-four million acres of land are devoted to roads and streets or 7 1/2 times that affected by mining. These statistics are given to show that surface mining is an intensive and efficient user of land but its impact is relatively insignificant when considered on an area basis.

Throughout these discussions about legislation that would regulate mining and mined land reclamation, it should never be forgotten that industry is the lifeblood of this great Nation and that mining supplies the raw materials without which industry could not exist. The people residing in the United States have the highest standard of living in the world, a standard of living that was achieved through the use of our natural resources by an industrious people under our free enterprise system. Increasing amounts of minerals will be required merely to maintain the current standard of living for an expanding population, let alone provide materials for an improved standard of living. Many people, in stressing the need for protecting the environment and conserving our natural resources, ignore the fact that mining supplies the raw materials and fuels used by industry to manufacture the goods and supply the energy that these people demand, and in most cases, upon which their jobs depend. Also, no one can deny that a viable domestic mining industry is essential for our national security.

Although many abuses have occurred in the past, it has been demonstrated in recent years that mining and attendant activities can be performed in a manner that is compatible with environmental protection. We must maintain a balance between mineral development and environmental quality. Numerous cases can be cited to illustrate what has been done and is being done to reclaim mined lands in our own State of Colorado. In some instances, land that was disturbed by mining has been reclaimed and put to a use that is higher and more productive than its original use. The coal mine operators in Colorado have reclaimed substantially all of the land disturbed by surface mining for coal within the State.

Another important point that tends to be overlooked is that miners, for the most part, are outdoorsmen who enjoy the aesthetic qualities of the environment as much, if not more, than the average person. Miners today desire protection of the environment by keeping disturbance to a minimum. However, it should be kept in mind that economic mineral deposits are rarely found where we would prefer to find them, but must be mined where they are found. No mine is deliberately placed at a location because it is convenient for economical operation, for access and for beautification or reclamation but quite simply can only be at the site where the mineral deposit is.

The national Mining and Mineral Policy Act of 1970 declares that it is in the national interest to foster and encourage private enterprise in the development of an economically sound and stable domestic mining industry. In furtherance of

this policy, we recommend enactment of Federal legislation that sets forth broad guidelines designed to assist the states in formulating and adopting reasonable regulations governing surface mining and reclamation of mined lands. It should be obvious that due to the differences in terrain and climate in mining areas and many variations in mining methods, uniform national standards for surface mining operations and for reclamation of mined areas are not feasible. The primary responsibility for mined land reclamation should rest with the states. In Colorado, for example, we already have legislation and regulations governing mining operations and mined land reclamation.

Most of the bills under consideration by this Committee require the imposition of a permit system by either the State or Federal Government. The administrator of the State or Federal agency responsible for enforcing the regulations is given the authority to deny a permit or order cessation of a mining operation under certain conditions. There is no provision in the proposed legislation for the mining operator to appeal such a decision. We believe that an appeal procedure is essential in order to avoid having mineral development subjected to the discretion of a single government official or agency.

One other recommendation we wish to make is that the Secretary of the Interior or other administrative official responsible for implementing whatever legislative may be passed by Congress should be required to obtain the recommendations of an advisory council that includes state and industry representatives in developing any rules or guidelines.

Thank you again for giving us this opportunity to make these comments.

STATEMENT OF HON. CLARENCE E. MILLER, A U.S. REPRESENTATIVE IN CONGRESS
FROM THE STATE OF OHIO

Mr. Chairman, I wish to take this opportunity to commend the Committee for scheduling these hearings on a matter of growing national concern. Strip mining has come to symbolize the means by which man can effect the most dramatic disruption of his environment. It is no longer a problem limited to the hill country of Appalachia. Because of the growing demand for cheap coal, strip mining is rapidly spreading to the coal reserves of the western United States. There is one thing that the people who live in strip mining areas have learned about this "cheap coal"—it does have a price which is not calculated into electric bills.

Where strip mining is prevalent and reclamation is inadequate, property values depreciate demonstrably, the local tax base is eroded, and the quality of life deteriorates. The scarred landscape and polluted waters become environmental debts which future generations must pay if they are to utilize the land. I believe that the people are no longer willing to accept the short-term economic premium associated with stripped coal at the expense of environmental deterioration. What people are looking for and demanding is a more reasoned and balanced approach in satisfying socio-economic needs and maintaining a high quality natural environment. The strip mining of coal is an area in which there is a gross imbalance that must be redressed.

In the Tenth Congressional District in Southeastern Ohio, which I have the privilege to represent, we have some of the most extensive and massive strip coal mining in the country. More than 10,000 acres a year in Ohio are being stripped and we have reached the point where major portions of some countries have been or soon will be stripped. Like many other states, Ohio has failed to effectively regulate strip coal mining and that is why people are turning to the federal level for a bold assertion of control.

Briefly, I wish to discuss several specific proposals to make coal mining environmentally accountable. These proposals are contained within a bill I have sponsored, H.R. 10699, the Coal Mining Regulation and Reclamation Act of 1971.

1. *EPA should administer and enforce a nationwide regulatory program.*—Uniform regulation can best remove the inequities among various state programs and insure that adequate environmental safeguards are integrated into the mining process at the earliest possible date. The Environmental Protection Agency which is charged with the responsibility of protecting, developing, and enhancing the *total* environment is in the best position of competence and credibility to effectively carry out a regulatory program. Already EPA has standard setting functions for air and water pollution—problems very much associated with coal mining.

2. *Strip coal mining should not be permitted in certain areas.*—Where it is determined that reclamation is not feasible or would violate existing environmental standards, strip mining should be banned. There is no reason why strip mining should be permitted in areas where, on the basis of physical and chemical investigations of the surface and subsurface, it can be reasonably established that present reclamation techniques would prove to be inadequate. Coal stripping in the national forests and wilderness system should be banned entirely. The high public interest and investment in these spectacular areas of unique natural beauty should be afforded maximum protection.

3. *Reclamation should mean the restoration of the mined land to its highest use.*—What is needed is not merely cosmetic reclamation, but a detailed assessment of potential as well as actual uses of the land before the mining and the preservation of these potentials through the mining and reclamation process. As our population increases, greater demands will be made on the land to fulfill living space and outdoor recreation needs, and the reclamation objectives we set now will determine how well we can utilize these lands to achieve our future needs.

4. *Reclamation should be placed on an acre by acre basis and should be performed concurrently with the mining activities.*—Each acre of land that is mined should be required to be reclaimed within a certain time, such as six months, from the commencement of the mining of that acre. When reclamation is pre-planned and performed expeditiously before natural forces set in, it is more effective and less expensive.

5. *The amount of the performance bond and the length of liability under it should be an effective incentive to carry out a successful reclamation program.*—A minimum performance bond of \$500 or \$1000 per acre is not unreasonable to require. Liability under the bond should continue until the success of the reclamation is determined. In most states, liability is tied to compliance with certain backfilling, grading, or planting requirements. This does not give adequate assurances that the reclamation will be successful.

In conclusion, I wish to state that I am very aware of and concerned with the fossil-fuel problem facing the country. Without a doubt we need the coal, but we must ask ourselves what price are we willing to pay for it. I believe it is not unrealistic that we insist that the cost of the coal we consume reflect the added overhead of environmental safeguards required to extract it.

STATEMENT OF HON. BRUCE HAGEN, NORTH DAKOTA PUBLIC SERVICE COMMISSION

Mr. Chairman, Members of the Committee: I am Public Service Commissioner Bruce Hagen. I am a member of the North Dakota Public Service Commission. I am here today to represent our Commission which is composed of myself and Commissioners Ben Wolf and Richard Elkin.

Our Commission is a state regulatory agency responsible for intra-state regulation of all utilities, motor carriers, railroads, telephone companies, public warehouses and elevators, auctioneers, surface mining, and various other duties.

We have a vast interest in the entire field of surface, or strip mining. First, as interested citizens, second, as the North Dakota state agency now responsible for regulating strip mining in our state. Since we regulate surface mining in our state, we are interested in any proposed legislation which may affect surface mining. However, we primarily want to inform your committee of our experience thus far in North Dakota.

According to an article which appeared in the New York Times on August 22, 1971, "... portions of six Western states—Arizona, Colorado, Montana, New Mexico, North Dakota, and Wyoming—face a topographic and environmental upheaval." Some of the reasons for this forthcoming topographic and environmental upheaval, as detailed by the Times, are almost so obvious as to be considered common knowledge. Chiefly, according to the writer of the article, the increased energy demand felt throughout the country, coupled with the present air pollution crisis and its attendant air quality standards, make the use of low sulfur coal by electric utilities very attractive. Moreover, we are perhaps now directly on the threshold of the large-scale gasification of coal in this country. The article in the New York Times, already referred to, indicates that the official forecasts are that in twenty years or so from now perhaps 300 million tons of coal each year will be processed at refinery-like plants, in order to produce a non-polluting fuel.

North Dakota is said to have one billion six hundred and seventy-eight million tons of low sulfur lignite available, along with 397 million tons of medium sulfur content lignite, for a total of 2 billion seventy-five million tons of stripable medium to low sulfur lignite. Estimates of known reserves in the state of North Dakota range from the New York Times' estimate of some 50 billion tons of lignite to an estimate from the office of the North Dakota State Geologist at the University of North Dakota of 250 billion tons of mineable or stripable coal.

One might justifiably ask: what has the state of North Dakota been doing in view of this evidence? In 1969 the legislative assembly enacted the state's first law for the reclamation of strip-mined lands, now codified as Chapter 38-14, North Dakota Century Code (1971 Supp.). The law became effective on January 1, 1970. The North Dakota Public Service Commission or (PSC) was made the agency responsible for administration of that act, with the State Mine Inspector as Chief Administrative Officer, responsible to the PSC in carrying out the program of the PSC as it concerned the reclamation of the strip-mined lands.

The law itself was not applicable to any mining operation wherein the overburden did not exceed ten feet in depth. The PSC was charged with the duty of issuing licenses for strip mining, computing and collecting the permit fees, and holding the miners' bonds of \$200.00 an acre for land included in the permits. Failure to obtain a permit to engage in strip mining in an area where the overburden exceeded ten feet in depth was declared to be a misdemeanor, punishable by a fine of from \$50.00 to \$1,000. The PSC was also given the option of employing injunctive procedures to stop such unlawful mining.

By amendment added in the 1971 session of the legislature, effective on and after July 1, 1971, any mining operator who willfully fails to comply with the reclamation act, or who refuses such compliance is ineligible for any further mining permits in the state, and if the non-compliance also results in a failure to reclaim, and a consequent forfeiture of the security on his bond, he must also cease all mining operations in the state within 30 days after such forfeiture. In the event of forfeitures, the PSC has the right to reclaim the land in keeping with the Chapter, but probably is unable to use the money from the operator's bond, since the state statute provides that the money from all forfeitures is to be deposited in the general fund in the State Treasury. The money from the general fund can only be made available to the PSC by legislative appropriation, or, in emergency circumstances, by what is known as the State Emergency Commission.

Since the effective date of the act, the PSC has issued 17 licenses to engage in strip mining, and has collected permit fees and bonds or security from mining operators for a total of 1,058 acres of land which are now under strip mining permit. The operators have filed their maps which the act requires each September 1 of the permit term, showing the areas where strip mining has been completed. The reclamation plans called for in the state statute are not due until December 1, 1971. The Commission in April, 1971, held an informal meeting with representatives of the mining industry, members of the public, and people engaged in conservation work, such as soil conservation people, game and fish, etc., and was requested at that meeting to prepare guidelines for the use of the coal mine operators in preparing and implementing their reclamation plans. Guidelines incorporating many recommendations which the Commission received, and which were interwoven with the statutory minimum standards were drafted by the Commission's staff and issued to interested parties for comment in July of 1971. September 1, 1971, was set as the deadline for the receipt of comments. Numerous comments were received, both praising and criticizing various aspects of the guidelines. As a result, the comments were considered, the guidelines were reconsidered, and the Commission decided to move from a guideline procedure to a formal rulemaking procedure.

Consequently, the guidelines have now been issued as proposed rules, after a formal hearing was held on October 4, 1971. We considered the testimony, finalized our rules and submitted them to our Attorney General. If they are ruled legal by the Attorney General's office, we will then issue them as part of the Commission's rulemaking process.

What we have done so far has not been without its practical difficulties, however. The statute enacted by the Legislature in 1969, as has been pointed out, provided that the State Mine Inspector be the Chief Administrative Officer, acting under the direction of the PSC. At the time that law was enacted, the State Mine Inspector was in a separate department of state government, with

his own appropriation and separate statutory life. However, the State Mine Inspector was appointed by the three Commissioners of the North Dakota Workmen's Compensation Bureau. Thus, as can be readily seen, the administrative officer of the strip mining law already was subject to two sets of masters, the Public Service Commission, consisting of three elected Commissioners, and the Workmen's Compensation Bureau, consisting of three governor-appointed Commissioners. However, the State Mine Inspector did carry out some inspection work for the PSC concerning strip mining, and did make reports to the Commission. In 1971, the legislature decided to do away with the separate appropriation for the State Mine Inspector, thus abolishing his separate department.

The Mine Inspector is now a full time employee of the Workmen's Compensation Bureau, and, since the Bureau is funded entirely by the employer's premiums which it collects under our compulsory state insurance plan, the State Mine Inspector is no longer carrying out his strip mining duties, since the Workmen's Compensation Commissioners believed that they could not, in good conscience, allow the State Mine Inspector to be working for the PSC, since his salary came entirely from employer's premiums, and no longer from the state's general fund. Thus, as a practical matter, the PSC no longer has this man's services available to it.

The appropriation for the biennium beginning July 1, 1971, and ending June 30, 1973, is \$3,000 for the administration of the strip mining law in North Dakota. The PSC has been unable to add any new staff to cope with these new duties, and has no one assigned on a full-time basis to strip mine regulation. The Commission's Assistant Engineer and its two lawyers work on this program on an intermittent basis. One saving grace of our present state statute is that the PSC is allowed to cooperate with the Federal Government in matters pertaining to the administration of this act, and is allowed to receive financial and technical assistance, assuming at some time one or both is forthcoming.

My fellow commissioners and I believe that our North Dakota law could be improved. In fact, we all believe regulation of strip mining properly rests in a state department of natural resources. I have testified for such a department to the North Dakota Legislature. But such a department has not been established by our legislature. Jurisdiction over surface mining now rests with the North Dakota Public Service Commission, and we will continue to do our best to fairly and wisely administer the law.

Mr. Chairman, I want to thank you and your committee for the opportunity of appearing on this subject which is of vital concern to the people of our state and nation.

Last week the North Dakota Public Service Commission tentatively approved the reclamation plan of Knife River Coal Mining Co. We did this to permit the company to seed grass this fall. Final approval will only be given after we have received comments and recommendations from our advisory group.

We have also held the bond for one acre for one small mine operator who no longer is in business. He seeded the area mined to grass by broadcasting the seed. We will hold the bond until we view the results next year.

This concludes my testimony which covers our experience thus far in North Dakota. I hope it is of some value to your Committee.

STATEMENT OF RAY HARM, NATURALIST, CUMBERLAND MOUNTAINS OF
SOUTHEASTERN KENTUCKY

I speak as a professional naturalist. I also speak as a native of Appalachia, born in the Alleghenies, and presently living in the Cumberland mountains of Southeastern Kentucky. I make my living primarily from the close study of wildlife and the ecology of the Eastern Mountains. The overall study of ecology, of course, must include man's impact on the environment and the environment's impact on man. Surface mining for coal in the mountains is a critical factor in this relationship. Therefore, I wish to contribute my comments.

In no way can surface mining in the mountains be a responsible mode of fossil fuel extraction acceptable to ecologic values. It poses a totally irresponsible relationship to the environment. The average person has been led to understand that reclamation restores the stripped land to an acceptable condition. This premise is entirely false; because irreparable damage is done before reclamation even begins.

The intricacies of ecology are complex and most difficult for the ecologist to explain in popular terms to the lay person. These difficulties are used to advantage by the strip mining industry to obfuscate the facts and to justify their destruction of our mountains with the popular idea that the replanting of vegetation will recover the damage they have done. It does not! It is misleading; a temporary superficial treatment, a placebo to the jaded conscience of the industry.

A stripped mountainside remains the source of destruction to the ecology of the entire watershed below for many years to come, whether reclamation is attempted or not! It is important to understand this fact which seems to be missing in the popular conception of strip mine reclamation.

Apparently people are totally ignorant of both the immediate and long term negative effects strip mining has upon our mountains. I hope that in this paper I can explain, in common sense terms, what happens when our mountains are stripped. Basic common sense is the only requirement needed for those who will pause long enough to realize that NOTHING grows fast enough or spreads roots fast enough, or is able to absorb water fast enough to prevent the overwhelming and inevitable effects of gravity on steep mountain slopes during rainfall and snow melt the first few years after a stripping operation. Recognition of this fact should make it a mandate to all of us to abolish strip mining immediately. Even if reclamation of the stripped land COULD become an effective practice—too much damage is done initially to the watershed and its inhabitants.

Those who do not realize this are led to believe that the planting of pines, locusts or fescue grass (which cover the graded strip bench and the slopes behind) is adequate. They believe that, because the damage is hidden, it is gone—out of sight out of mind! This simply is not so.

It takes vegetation at least four seasons to get any substantial root system at all. When grass seeds are sown, they are frequently washed down the steep slopes with the rain. If the rain doesn't get them immediately, the freezing of the upper portions and upheaval of the surface exposes the seeds and paltry roots (paltry because the soil is so poor) which easily wash down the mountain when the snow melts or when it rains again. In Kentucky where we are *supposed* to have one of the best reclamation programs going, the reclaimer is required to seed a stripped area only once. In any event, before reclamation is started a tremendous amount of "sheet erosion" takes place (the loose surface over the entire area), this occurrence is definite, absolute and undebatable during the entire mining operation for months and months and some time afterward. The damage to the lower mountainside, the creeks and larger streams and rivers is extensive and totally ruins the eco-systems within the stream environs. This, significantly, not only plays havoc with the plant and wildlife communities but does in turn adulterate and degrade the life style of those people who, as most folks must realize, tend to live along the creeks and in the valley bottoms. Almost all of our mountain slopes are so steep that it is economically and physically impractical to restore them to configurations which will no longer spew down destruction from their exposed innards.

When the overburden of soil and weathered rock is removed, many fresh minerals are exposed. Sulfides are common in those rocks associated with coal. Through exposure to aid and moisture the sulfides are chemically weathered, producing acids and residues which deal death to living organisms. Reclamation may eventually slow down some of the production and disposal of this corruption but our lifetimes are not long enough to see the end of most of them. And within our lives we can witness for many years a significant volume of sediment from "gully" erosion on most "reclaimed" mining areas to have a serious negative effect on our lives and environment.

From the naturalist's eye it is known that acids, clay, silt, mud, shale, boulders, et cetera, when carried down the mountain by rain and erosion have a negative effect all the way down the slope and into the watershed below. The mud has a negative effect by sealing the porosity of the soil and consequently suppressing oxygen needed by plant life (which in turn is used by other living things). Almost all major hollows on a mountain have springs. Side hollows to these also contribute spring flow. These streams flowing from these springs support great numbers of aquatic animal life, which are depended upon by other wildlife for food. When these streams are invaded by the overland flow of acid water and sediment from strip mines above, it must be obvious to anyone what the tragic results are. The sediment, although in some cases not immediately killing aquatic life, builds up on the bottoms of these creeks and streams destroying the habitat

requirements of most of the aquatic species and makes it impossible for them to breed. They do NOT accept alternatives; as the ecologist is keenly aware. That is why one goes to the cool waters to fish for certain kinds of fish, warm or quiet waters to find others. As mentioned, some may manage to survive in spite of muddy or silted water from the pure survival point of view, but survival of the SPECIES is another story on each watershed. They will fail to "go forth and multiply" next season because of the destruction of the special habitat they must have for mating, breeding and nesting. This applies to numerous mountain frogs, toads, salamanders, fish and an unending list of small crustaceans, micro-organisms and insect life that are so characteristic of the Appalachians—the Appalachians, which when in a healthy state offer the cool, crystal clear, running water.

When these waterways become turbid and laden with silt, and when the flow rate is changed or saturated with acids, the richness of animal life is extinguished. This is readily understandable to the biologist—it is his business to understand the delicate dependence of one life form upon another in nature but it is difficult to explain to those not familiar with the inter-relations of an ecosystem. Of course, one could write a book on the further negative effects imposed upon other animals and plants (such as the otter, muskrat, beaver, the raccoon, the mink) which depend upon aquatic life. At various seasons many others depend on the vegetation which might normally grow near a healthy stream. Lack of some aquatic influenced vegetation has repercussions because when these plant foods decrease in availability, the animals are hard-pressed to fill themselves from their accustomed habitat. This forces them, at a critical time of the year, to seek nourishment elsewhere so they can build fat for the winter.

One might think these problems are insignificant. Nature, left to her own devices can heal the effects of natural disasters; and the mud flows and other effects of strip mining are similar to natural catastrophes caused by fire and floods. However, the area mined and volume of effluents far surpass the scale and recurrence interval of natural catastrophes. Considering the extent that surface mining has already spread itself over our mountains, it is alarming to consider what will happen knowing how much coal remains yet to be mined.

One must keep in mind that this situation prevails EVEN WITH RECLAMATION STANDARDS IN PRACTICE. The amount of infertile subsoil and weathered rock that is carried downward by the rains DURING the stripping operation and until such time as some growth from reclamation attempt does take hold, are sufficient to destroy entire populations of vital organisms within a watershed for many, many years to come. It is criminal, in my estimation, to continue this habitat destruction, when there remains such a strong alternative found in responsible deep mining methods.

There are no alternatives from the imposing fact that the initial disturbance of these wide expanses of mountainside assures long term destruction of the environment. I have personally investigated watershed after watershed below "reclaimed" stripped areas in Eastern Kentucky. The spoilbanks often support substantial growth but the "gully" erosion persists between the planted pines or the fescue grass. (These gullies are consistently absent in the pictures published in the magazines and papers by the proponents of surface mining). These gullies continue to expand with each rain and melting snow, shedding mud, rocks and acid waste down the mountain slopes year after year. It is a fact of continuing death to the environment below.

THE SOCIO-ECONOMIC QUESTION

My home is on Big Clear Creek between Pine Mountain and the Log Mountain in Southeast Kentucky. I live in what is unquestionably a classic "depressed Appalachian area." Before strip mining and after the Davisburg deep mine played out, the folks on Big Clear Creek fell victim to the "depression of Appalachia." Things are still mighty hard because little has changed here; except for the worse. The people doing the stripping are often from outside of Kentucky, so there are few local people whose lives are benefited by strip mining. During the initial economic depression prior to strip mining the only beneficial quality of life found here at all was aesthetic. There was still the grandeur of the mountains. There was always the clean mountain air. As poor as one might be, he could be rich in his history and his land; a land where there were clear, spring-fed branches and creeks adding even aural encouragement that things were not as bad as they could be. Now, of course, even that is gone. Big Clear

Creek is not clear. Our streams run polluted more and more as new, individual stripping operations commence upstream. Since it takes many years for reclamation efforts to do any retarding of erosion at all, and since all strip mining doesn't start and stop at one time—people of the mountains have red, yellow and black streams to look upon indefinitely. How in God's name can the people who make the laws of our land not see that one simple fact? Each time a new cut is made, the stream below it runs polluted for the entire operation months and months and years afterwards; and then another operator comes in somewhere else on the same watershed. Are we to suffer this until all the coal is removed? What will be left?

Jobs? Our people have had the employment potential greatly reduced by strip mining. Strip mining is economical because it takes so few men to mine the coal. The huge high-lift and the large bulldozers with their great capacities have replaced thousands of mountaineer coal miners. Common sense again. Think how many men would have employment using deep mine methods to extract the same coal. The need for fossil fuels will demand that the coal be removed in either event. Why can't we pass laws that will make the removal of coal one of a responsibility to our land and productive to our social needs? Of course it will cost more—we understand that!

I know very few people living in these mountains who are informed enough to protest, with reason, against the results of strip mining to our way of life. (Indeed I think that the average city man is even less informed.) The independent nature of the mountain folk works against them. As a mountain is stripped it is worked often along the entire length of the mountain as long as the seam and the permit holds out. The huge cuts of earth are removed over each spur and hollow, reaching the isolated mountain families below, one at a time. Because of their seclusive nature, their limited education and lack of exposure to the modern pace and way of things, they lack the know-how, ability and resolve to protest, in most cases. They see those huge machines up there manned usually by men from different parts of the country and they shy away from fighting the legal manifestations and the seemingly great power of all that organization. Believe me, the people of the mountains are overwhelmingly opposed to surface mining. They just don't know how to oppose it where it counts. Strip mining comes in and leaves them with the muck and filth and dead streams—to speak nothing of the emasculated dignity of the very mountainsides themselves. I extend a personal invitation to any legislator to come to Southeast Kentucky and visit us—we'll give a tour of what the NORM really is and visit some folks up any hollow of their choosing.

Strip mining only offers short term advantages to the very few men involved in its operation and finance. The real expense is born by the local people after the strippers leave our raped land behind. We stare and wonder why and how it could happen. Obviously few local people ever benefit from strip mining and the great majority are robbed of their natural rights. Yet it is permitted by the laws of our land. Our only benefit is from the power the coal produces. We feel the same power could be produced by the same coal and our people could have more employment in an amendable habitat if strip mining were abolished. The auger, high-lift and bulldozer hurt us in many ways. Locally the coal trucks have been seen carrying signs stating "BEAUTY IS A BISCUIT," "COAL FEEDS OUR FAMILIES" and "THE COAL WE MINE MAKES YOUR LIGHTS BRIGHT" and "SUPPORT SURFACE MINING"; knowing the simple trusting mountaineer would not want to take a job from anyone. But deep mining answers, most responsibly, any and all of these signs positively. In spite of our lack of knowledge about more modern ideas, many are becoming more aware and even vociferous about these injustices to our people and their environment.

As a naturalist, I am professionally and critically aware of the specific reasons that the reclamation of strip mined areas is impossible in the mountains. My associates and friends in the scientific fields have documented it; the geologists, hydrologists, biologists and zoologists I work and confer with have been too long pushed into the background and tagged "nature-loving nuts" by the great powers of the lobby and surface mining interests. Listen to these men. Their conclusions are scientific in addition to being aesthetic.

Strip mining ADDS to social depression. Legislation that does not totally abolish this method of mining in our mountains can only add to poverty. Strip mining creates bad water, bad environment, and generally, less employment for our people. It presents serious obstruction to the operation of our second and renewable natural resource, lumber. Strip mining isolates thousands of acres of

forest land on the tops of mountains by encircling them with inaccessible cliffs as much as thirty feet high. It squanders the timber resources in two other ways; the replacement of millions of trees with spoil-banks and the retarding of tree growth below. The renewable aspect of vast tracts of this natural resources is inhibited across a time span beyond our experience and comprehension.

In spite of reclamation, and I need to emphasize this; **IN SPITE OF IT**, strip mining creates floods, mudslides, pollutes existing water reservoirs, pollutes ALL streams to which it is tributary, interferes with a stream's normal ability to sustain floods with a minimum of damage; can contaminate individual and public water supplies and creates a bad social-economic situation where it is practiced. **ALL THESE LIABILITIES ARE ASSURED BEFORE THE FIRST TREE OR SEED OF GRASS IS PLANTED!**

We all agree the coal is needed, we all agree it can be mined. We of Appalachia would like to do it with responsibility and be able to look back with dignity and pride of our life in these mountains. It is too easy sometimes for urban people away from isolated areas to make determinations which cause effects they neither anticipate nor understand. In their minds they are detached from the land and rural people which help sustain them. There is usually an underlying opinion that the land is somehow detached from civilization. However, the link between man and the land cannot be transcended. This is currently obvious through enlightened reason. It will become painfully obvious to urban and rural man alike if the errors of our current destruction continue unchecked.

The people of the mountains have very little. They are generally a strong indigenous part of the land—tear up the land and you can't help but tear up an already economically depressed people. Give them work that will give them dignity. Coal is their own natural resource. In large part it can be the source of their own economical survival. Surface mining completely overcomes the people AND the land in our mountains. Surely twenty years ago, when strip mining was in its infancy, we could understand and could have lived with a few destroyed areas—and we have—but today just one flight in a small airplane over most any area of coal-laden Appalachia will unveil preposterous thousands of square miles of mutilated mountains which will remain that way, longer than any of us can either experience or comprehend. Men of detachment from our land are waging a conquest against nature and the minds of men. They have dared to trifle with the Creation, cheapening it beyond measure. Where there was diversity and the rich promise of possibility for all life to come, there is now a uniformity of destruction and hopelessness. What a tremendous shame on us!

STATEMENT

FOR

SURFACE MINING LEGISLATION HEARINGS

(S. 77, S. 630, S. 993, S. 1160, S. 1240, S. 1498, S. 2455)

CONDUCTED BY

UNITED STATES SENATE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

SUBCOMMITTEE ON MINERALS, MATERIALS AND FUELS

NOVEMBER 16 - 17, 1971

WASHINGTON, D.C.

BY

DON REINING, EXECUTIVE SECRETARY

SOUTHERN CALIFORNIA ROCK PRODUCTS ASSOCIATION

SAN BERNARDINO - RIVERSIDE COUNTIES ROCK PRODUCTS ASSOCIATION

1811 FAIR OAKS AVENUE

SOUTH PASADENA, CALIFORNIA 91030

Mr. Chairman and members of the Committee:

I am Don Reining, Executive Secretary of the Southern California Rock Products Association, and the San Bernardino-Riverside Counties Rock Products Association in South Pasadena, California. This statement is made on behalf of the 21 members of the Associations, whose operations are in Los Angeles, Orange, San Bernardino, Riverside, and Ventura Counties in Southern California. Our membership produces an estimated 95% of the rock, sand and gravel in these five counties.

This statement is prepared in order to give your members an overview of what we do in California, especially on the subject of reclamation. We are privileged to present this statement on this subject.

The underlying assumption of the numerous bills introduced in the 92nd Congress on the subject of surface mining, is that open pits resulting from such mining are inherently bad and a permanent blight on the landscape. However, man-made excavations, or quarries, have been a common sight in the Los Angeles metropolitan area since the turn of the century. The ever-expanding City of Los Angeles has required large quantities of sand and gravel for its construction programs. This has resulted in the excavation of numerous properties in the urban area. Several other properties have been excavated for the removal of clay, used in the brick and clay pipe industry. Others have been excavated as borrow pits, with the excavated material being used as fills for freeways, overpasses, building construction, etc.

The rock, sand and gravel industry has met the continuing market demand over the growth years since World War II. Mainly because of the close proximity of large quantities of aggregate materials, the growing cities in Southern California have enjoyed a low price on basic building materials.

Sand and gravel production in California has risen from 2 1/2 million tons in 1920 to over 121 million tons in 1968. About one-third of the total production is from the Los Angeles area, with the balance coming from San Diego and northern and central California. Simply stated, thru maximum utilization of close-in, available resources, the cost has not appreciably increased in proportion to other building materials. Close-in quarry sites provide building materials at the lowest possible cost and, at the same time, create disposal space for the ever-increasing volume of solid wastes produced in our modern society.

It has long been an established practice to fill man-made excavations with the solid waste materials generated in an urban community. Broken concrete, paving, asphalt, plaster, broken glass, ashes from incineration and other inert solids have been used over the last 60 years to fill depleted sand and gravel quarries and other excavations. (*1) Disposal of solid wastes (by sanitary landfill) in Los Angeles County, is estimated to be in excess of 9,200,000 tons per year. (*2) Regulations governing solid waste disposal in depleted quarries include such things as fencing, landscaping, roadways, dust control, fire protection, daily covering of the refuse, and control of rodents and flies. Local governmental agencies maintain inspections of all waste disposal facilities in Los Angeles County. The availability of these depleted pits has provided an important element in the solution of the solid waste disposal problem. Needless to say, all of the reclamation was done without the necessity of performance bonds. Land prices in our urban environment will not permit depleted pits to remain empty. Economics dictates the ultimate reuse of these properties.

A survey shows, in licensed disposal sites from 1948 to 1969, that fifty-five disposal sites have been completely filled in Los Angeles County. Forty-seven of these disposal facilities were operated by private industry and eight by public agencies. Of the fifty-five sites completely filled by January 1969, twenty-five were sand and gravel quarries, clay quarries and borrow pits.

As of January 1, 1969, twenty-four privately owned disposal facilities and ten public agency sites were being filled with solid wastes. Fourteen of the thirty-four landfill sites now being operated were quarries. The summary of landfill operations in Los Angeles County does not include all of the quarries that have been filled in Los Angeles County. Several properties have been filled in neighboring cities that are not included in this report, and the survey did not include filling operations conducted by large industries, such as foundries and steel mills, on their own property. It is safe to say that at least twenty-five additional quarries have been filled in the last thirty years. (*3)

The increasing demand for land near our metropolitan areas has focused more attention on reclaiming gravel pits once the gravel has been extracted. In the case of Los Angeles County, the pits have been turned into an asset by using their depressions for sanitary landfills (the cut-and-cover method used to bury refuse). After the pits are back-filled with waste materials, these areas have been reused for commercial, industrial and recreational purposes: lakes used for fishing and boating; supplemental spreading basins for ground water recharging and flood control; golf courses and country club areas; parks with special uses such as golf driving ranges, archery and rifle clubs, etc.; commercial uses such as transportation terminals, warehousing facilities; light industry, (in many cases, railroad facilities are already available at the site). It can be concluded, without a doubt, that the gravel pits have been redeveloped into valuable assets. (*4) In the Appendix are eight examples that describe uses of quarries filled with solid wastes in the Los Angeles area, and five examples of rehabilitated sand and gravel pits where water has created park and recreation facilities in the San Francisco area. (*5)

The sand and gravel industry in California, for years has been involved with environmental conversion, the conversion of natural resources from their natural state to a usable state benefiting community environment through planning and cooperation. Our industry in California has realized a program must be improved upon, kept in tune with the times. We have taken additional

steps to rehabilitate our mining operations. Currently our Associations are working with one of the leading landscape architectural firms in California. They are developing a comprehensive planning/management program for excavation sites. They are identifying project opportunities as related to the resources and needs for beautification and rehabilitation, along with landscape criteria for prototype development in terms of plant material, irrigation, construction materials, construction costs, landscape maintenance program, and cost for our industry. This project will be completed on November 15, 1971. California State Polytechnic College at Pomona, has a School of Environmental Design. An agreement has been entered into between the Associations and the Cal Poly Kellogg Unit Foundation, Inc., for professional services for developing an environmental planning system for the development of existing and future sand and gravel operations. Reconnaissance research and systems analysis will be completed by June 1, 1972, and will give our industry additional design and technical assistance in developing reclamation plans for the sand and gravel operations.

Few people realize our industry's importance, and fewer yet understand the make-up of the industry. People see the trucks traveling the freeways, occasionally see ready-mix trucks delivering their products, but few ever wander into the areas where actual harvesting of materials is taking place. Recently, the United States Department of the Interior, Bureau of Land Management's State Office in Sacramento, asked if we would conduct a tour for 50 of their professional people. We were delighted to have them spend most of one day touring our reclamation projects, along with our sand and gravel operations. At that time we had just retained a designer to make a study for the Association. It was his idea to conduct a survey among those in attendance on the tour. We were gratified with the answers. Those in attendance were overwhelmed at what they saw. We would like you, personally, to see our operations as did the Bureau of Land Management people. Too often the only people who have seen our operations are other sand and gravel producers. Unfortunately, the industry has not properly told its story,

and consequently reclamation laws are being prepared, encompassing many problems that may not be relevant to conditions in all parts of the country; but today we speak only of California.

The Southern California Rock Products Association has been urging adoption of realistic surface mining legislation for the State of California for the past four and one-half years. Members of the Association are aware of the Interstate Mining Compact and its purposes. I would like to quote from one of their communications:

"Individual states have the power to establish and maintain programs of land and other resource development, restoration and regulation appropriate to cope with the surface effects of mining. The Interstate Mining Compact would not shift the responsibility for such programs. On the other hand, states acting singly and without reference to actions in other jurisdictions labor under serious handicaps in mounting desirable programs. While physiographic, climatic and regional differences in density of population and varying availability of recreational facilities make the application of rigid, single standards inappropriate, fundamental equity would be served by making it possible for individual states to construct their programs in such a way that those mining operations which actually are similarly situated be afforded similar types of assistance and be subjected to comparable regulatory patterns. There is much that an interstate agency, like the Interstate Mining Commission established by this Compact, could do to develop and pool experience in dealing with mining problems." (*6)

This statement in itself explains why states should have the power to administer their own programs of land and other resource development, restoration and regulation, appropriate to cope with the surface effects of mining.

Regulations designed to cope with surface mining problems already exist in the five counties in which this Association has members. In fact, there are five county and ten city ordinances, (or special use permits) controlling mining and reclamation of land. Sand and gravel firms have been presenting reclamation plans to city and county governments for many years. (*7) Because of the numerous ordinances the industry must contend with, we have supported proposed California State legislation for a workable State policy and mineral conservation plan, a plan that would be drawn on a regional concept, utilizing wherever possible, the land use requirements of entire regions as well as affected communities. We have recognized, as has Congress, the need for strong and adequate regional planning programs.

In 1967, the California State Legislature, thru a Senate Resolution, requested a review for uniform controls and standards for surface mining. The Senate Committee on Natural Resources and Wildlife subsequently requested the State Mining and Geology Board to review the Resolution and advise the Legislature as to the nature of the problem and the need for legislation. The Board subsequently suggested that a state review of surface mining would be of value in view of the burgeoning public concern over land use and related environmental considerations. The Board advanced, by resolution, its proposal for a state-wide examination of surface mining and reclamation, to the Secretary of the Resources Agency, Mr. Norman B. Livermore, Jr. Mr. Livermore concurred in the need for such a study, and in November 1968, requested seven representatives of industry, state and local government, and the academic community to undertake an inquiry to determine "such regulations as may be needed to avoid 'collision' between urbanization and the mining industry". The Surface Mining Committee received necessary staff assistance from the Department of Conservation and from the Senate Committee staff. (*8)

The Surface Mining Committee held a series of hearings in several centers of the state to gather facts and information. At these hearings, persons representing the mining industry, the various levels of government, and those interested

in the several aspects of conservation presented statements. Field trips were also planned so that the Surface Mining Committee would have full knowledge of the problem under study. (*9) At the Los Angeles hearing, a representative of the United States Bureau of Mines presented an overview of surface mining regulations throughout the country.

The final report was drafted October 26, 1970, and sent on to the State Mining and Geology Board of Directors. At their November meeting, they accepted the report and adopted it. An Ad Hoc Committee, consisting of members of the Board, was appointed, and they presented a State Mining and Minerals Policy, along with a proposed Act on Mining and Mined Land Reclamation at the meeting of the Board, September 14, 1971. It is expected that the minerals policy and mining and mined land reclamation act will be presented to the Governor's Cabinet prior to the January 1972 session for introduction to the Legislature.

All members of the California State Senate's Natural Resources and Wildlife Committee co-authored a Senate Concurrent Resolution requesting the Division of Mines and Geology, in concert with the State Mining and Geology Board, to submit proposed legislation regarding State minerals policy and mined land reclamation to the Governor and Legislature not later than the fifth calendar day of 1972's regular session. (*10)

Congress must take a long hard look at tomorrow's planning policies to insure that they are consistent with regional objectives. Economic, as well as ecological requirements of entire regions must be considered by cities and counties. For example, in Southern California, sixty percent or more of the rock, sand and gravel used in the Los Angeles metropolitan area, comes from the San Gabriel Valley; from one city. Sound land use criteria must be created, codified and made applicable for all people living in the Los Angeles metropolitan area. We are sure similar anomalies exist in other states. Congress must approach this mining and reclamation problem on the premise that mining is a necessary and

vital part of our economy, and we must therefore, provide for its preservation in any future environmental program.

On the whole, we feel your proposals do not reflect or acknowledge the efforts the mining industries are voluntarily exerting in the area of reclamation. Authors of mining and reclamation bills have drawn conclusions about the mining industry in general, and would purport to give these laws uniform application throughout the United States. This would be a grave mistake and would, in our estimation, prove unrealistic if not unworkable. Many of us in California feel that Congress, in adopting most of the proposed legislation would saddle our industry with legislation designed for coal and metal mining. In 1967 I conducted an on-the-spot survey of mining operations in ten of the major mining states, thus many of my comments are based upon personal observation and impressions, as well as from concentrated research. If legislation at the Federal level must come to pass, we ask that Congress adopt realistic regulations, regulations flexible enough to adapt to specific and diverse conditions existing in the individual states and within the many mining industries. In short, Federal legislation must be designed to complement and assist state programs wherever possible.

APPENDIX

- (*1) (*3) Carl Sexton's statement made at Los Angeles hearing, May 21, 1969.
Mr. Sexton is President of Los Angeles By-Products, Los Angeles, California
- (*2) Frank R. Dair's statement made at Los Angeles hearing, May 21, 1969.
Mr. Dair is Division Engineer, Refuse Division, County of Los Angeles Sanitation Districts, Los Angeles, California.
- (*4) Southern California Rock Products Association publication, etc.

(*5) SOME SOUTHERN CALIFORNIA RECLAMATION PROJECTS

BLUE DIAMOND PIT - The Blue Diamond Pit is located east of Alameda Streets and north of old temporary Washington Boulevard in the City of Los Angeles. The Blue Diamond Company excavated sand and gravel from this property and produced in excess of five million tons of aggregates used by the building industry in the Los Angeles area. The City restricted fill under the permanent roadway to solid inert materials. Washington Boulevard was constructed about 1965. The permanent roadway, which is a main thoroughfare in the City of Los Angeles, now traverses the original pit from east to west. There is a Santa Fe Railway structure on the same property, on fill approximately 90 feet in depth. The depth of the fill under the roadway is in excess of 100 feet in the center of the original pit. The property is now owned by the Flintkote Company.

METROPOLITAN PIT - The Metropolitan Pit, of 18 acres, is located east of Alameda Street and north of 37th Street in the City of Vernon, and was excavated by Consolidated Rock Products Co. Approximately eight million tons of sand and gravel were removed from this property. Fill of this site was limited to solid inert materials, and filling was

completed in 1958. The property has been sub-divided publicly dedicated, streets constructed, and eight industrial buildings erected. On the property, as it appears today, one can plainly see the successful shaping of the land to conform with adjoining property, owned by Los Angeles By-Products.

SLAUSON PIT - The Slauson Pit was located in the 7100 block of east Slauson Avenue in the City of Commerce. This is a five acre parcel excavated early in World War II as a borrow pit. Fill at this site was primarily inert solid material, but also included some combustible material. Fill was completed in 1961 and a modern 60,000 square foot industrial warehouse building has been constructed along with another building.

VICTORY - VINELAND PIT - This pit was a sand and gravel quarry at the corner of Victory and Vineland, a residential section of the San Fernando Valley. Fill was completed about 1958, and a modern shopping center has been constructed on the site. This quarry was filled with brush, tree trimmings, combustible refuse, and some inert solids. The building structure itself is supported on pilings driven through the refuse fill to solid ground below.

TUXFORD PIT - This pit was located west of Tujunga and south of Tuxford Avenue in the San Fernando Valley. It was a sand and gravel quarry, producing vast quantities of building materials for the Los Angeles building industry. Filling commenced in 1953. This is a heavy industrial zone (M-3). After filling was completed, the property was leased to a firm in the auto dismantling business, and the land was later sold for approximately \$21,000. per acre.

SLAUSON & GARFIELD PIT - Approximately 10 acres of land was excavated as a borrow pit on the north side of Slauson and east of Garfield in the City of Commerce. This excavation was approximately

25 feet deep and was filled with combustible refuse about 1954.

Modern commercial buildings have been constructed on this site.

These buildings are supported on pilings driven through the refuse fill to solid ground.

SANTIAGO CREEK - Recontoured land in Santiago Creek, a beautiful golf course located at Tustin Avenue and Santiago Creek, in the City of Orange, Orange County, replaces a former sand and gravel extraction operation.

SCHOOL AND RECREATION SITE - Located in the San Fernando Valley a depleted sand and gravel deposit is now being reclaimed by the cut-and-cover method of sanitary landfill. The newly completed North Hollywood Freeway passes across the northern edge of the property. This reclamation site will provide future opportunity for expanded school and recreational development by the City of Los Angeles. The property is now owned by the City of Los Angeles.

SUMMARY OF LANDFILL OPERATIONS IN LOS ANGELES COUNTY
(see EXHIBIT A attached)

SOME NORTHERN CALIFORNIA RECLAMATION PROJECTS

ROCKRIDGE CENTER - Located at Broadway and Pleasant Valley in Oakland, is a former quarry that is now a community shopping center and reservoir. Reservoir is now owned by Claremont Country Club.

VASONA PARK - Near Los Gatos, California, comprises 158 acres of rehabilitated sand and gravel pit. This park, under the jurisdiction of the Santa Clara County Park and Recreation Commission, is an excellent example of rehabilitation of depleted aggregate sources. The depleted pits now hold water and provide water sports facilities.

Adjoining Vasona Park, is another area where sand and gravel have been extracted, but which now serves as percolation ponds surrounded by commercial, industrial and residential projects. These percolation areas serve the Santa Clara Water Conservation District.

SHADOW CLIFFS - Regional recreation area, at no cost to the taxpayer directly, this 144 acre park, including beach, bathhouse complex, picnic facilities, boat dock, parking and turfed area centered around a 90 acre lake. The sand and gravel division of Kaiser Industries, Inc. donated the land, conservatively valued at \$250,000. Kaiser began quarrying the old wedged shaped "south pit" in 1930. The Park District acquired title to the property in December 1969. Shadow Cliffs Aquatic Park opened on a partial basis July 30, 1971.

SANTA CRUZ - The University of California in Santa Cruz has converted an old limestone quarry into a beautiful amphitheater. Granite Rock Company owned and operated this quarry.

NILES QUARRY - The general development plan for the Niles Quarries in Fremont, California has been jointly prepared in compliance with City requirements for a quarry use permit. It is submitted jointly by Pacific Cement and Aggregates, Rodes and Jamieson, Ltd., and Niles Sand and Gravel, who are currently conducting quarrying operations on most of the land under consideration. Future use of the land included 165 acres for park land, 24 acres for apartment complexes and 369 acres for water. The six lakes which are proposed will offer a wide variety of water oriented recreation possibilities, and in combination, will create a unique environment.

(*6)

"The Interstate Mining Compact", a review of purpose with "the Compact, article by article, and suggested legislation".

- (*7) Counties with rules and regulations re: quarrying and reclamation:
 (a) Los Angeles; (b) Orange; (c) Riverside; (d) San Bernardino;
 (e) Ventura. Cities with rules and regulations re: quarrying and
 reclamation: (a) Azusa; (b) Anaheim; (c) Arcadia; (d) Claremont;
 (e) Duarte; (f) Irwindale; (g) Los Angeles; (h) Montclair; (i) City
 of Orange; (j) Upland.

- (*8) Report of the Committee on Surface Mining for the State of California
 presented to the California Division of Mines and Geology Board,
 October 27, 1970.

- (*9) Committee on Surface Mining for the State of California - list of
 hearings, tours and meetings:

April 2, 1969	San Francisco	Hearing
May 21, 1969	Los Angeles	Hearing
May 22, 1969	Los Angeles	Tour
June 24, 1969	San Diego	Hearing
July 23, 1969	Sacramento	Hearing
July 24, 1969	Sacramento	Tour
September 9, 1969	Redding	Meeting
April 3, 1970	San Francisco	Meeting
June 23, 1970	Pasadena	Meeting
October 26, 1970	San Francisco	Meeting

- (*10) California State Senate Concurrent Resolution 89 (see EXHIBIT B
 attached) [Now Senate Resolution Chapter # 189]

EXHIBIT A

Summary of Landfill Operations

in

Los Angeles County

1948 - 1969

Completed Privately Operated

Landfill Sites (circle)

<u>No.</u>	<u>Name</u>	<u>Type</u> *	<u>Open to Public</u>
1	101 Disposal	LR, CP	yes
2	San Dimas Dump	LR, CP	yes
3	Blanchard Street	LR, CP	yes
4	Harvey Brothers	LR, GP	yes
5	Alameda Street	CC	yes
6	BKK Dominquez	LR, CC	yes
7	Broadway-Main	LR, CC	yes
8	Gardena Valley 1 & 2	LR, CC	yes
9	Gardena Valley 4	LR, CC	yes
10	Gardena Valley 5	CC	yes
11	Gardena Valley 6	CC	yes
12	Hardwick Disposal	CC	yes
13	Futernick	LR, CP	yes
14	Gage Avenue	LR, CP	yes
15	Salvage Corp.	CC	yes
16	Downey Dump	CC	yes
17	Adams Ind.	LR, CC	yes
18	Kalico 1	LR, CP	yes
19	Ward Disposal Co.	C	yes
20	Vautherine	LR, GP	yes
21	California By-Products	LR, CC	yes
22	Cal Compact	LR, CC	yes
23	Russell Moe	C	yes
24	Marriott-Ross	CC	yes
25	City Dump & Salvage	CC	yes
26	Venice Dump	LR, CC	yes
27	Kalico 2	LR, CP	yes
28	Kalico 3	LR, CP	yes
29	Valley Park	LR, GP	yes
30	Mojave Corp.	LR, CP	yes
31	City Dump & Salvage	LR, CC	yes
32	Cogen Dump	HS, CC	yes
33	A. V. Hohn	CC	yes
34	Victory & Vineland	LR, GP	yes
35	Pendleton & Glenoaks	LR, GP	yes

*LR-Land reclamation; CC-cut and cover; GP- gravel pit; CP - clay pit; HS - hillside; C- Canyon

<u>No.</u>	<u>Name</u>	<u>Type</u>	<u>Open to Public</u>
36	DeGarmo Pit	LR, GP	yes
37	Valley Transfer	LR, CP	yes
38	Church Dump	LR, CP	yes
39	American Disposal	LR, CC	yes
40	Southwest Conservation	LR, CC	yes
41	BAK	LR, CC	yes
42	Valley Land Development	HS, CC	yes
43	Tuxford Pit	LR, GP	yes
44	Tujunga Pit	LR, GP	yes
45	Hardwick Wilimington	LR, CP	yes
46	Port #1	LR, CP	yes
47	Ledger	LR, GP	yes

Completed Publicly Operated

Landfill Sites (circle)

48	Pomona City Dump	CC	no
49	Brandford Street	LR, GP	no
50	Santa Monica City	LR, CP	no
51	Compton City	CC	no
52	Redondo Beach	HS, CC	yes
53	Long Beach City	CC	no
54	Torrance	LR, CP	no
55	Avenue 26 & Lacy	LR, CP	no

Active Privately Operated

Landfill Sites (triangle)

1	San Gabriel Valley	C, CC	yes
2	Hewitt Pit	LR, GP	yes
3	Lancaster Dump	CC	yes
4	Puente Waste Disposal	HS, CC	yes
5	Land Reclamation	HS, CC	yes
6	Owl Park Corp.	LR, GP	yes
7	Azusa Rock & Gravel	LR, GP	yes
8	Norwalk Dump	LR, CP	yes
9	Harbor Dump	LR, CP	yes
10	Port Disposal	LR, CP	yes
11	Tuxford, Penrose Pit	LR, GP	yes
12	Bradley Avenue	LR, GP	yes
13	North Valley	C	yes
14	Antelope Valley	HS, CC	yes
15	Operating Industries	HS, CC	yes
16	Wilco	CC	yes
17	Heyden Pit	LR, GP	yes
18	Dairy Valley Dump	LR, CP	yes

<u>No.</u>	<u>Name</u>	<u>Type</u>	<u>Open to Public</u>
19	Kobra, Inc.	LR, CP	yes
20	BKK (West Covina)	C	yes
21	Ascon	LR, CP	yes
22	LA By-Products	LR	yes
23	Livingston Pit	LR	yes
24	Alpha Investment	LR	yes

Active Publicly Operated

Landfill Sites (rectangle)

25	Bishop's Canyon	C	no
26	Toyon Canyon	C	no
27	Sheldon-Arleta	LR, GP	no
28	Burbank City	C	no
29	LA Co. San Dist. 1	LR, CP, C	yes
30	LA Co. San Dist. 2	HS, CC	yes
31	LA Co. San Dist. 4	C	yes
32	LA Co. San Dist. 5	HS, CC	yes
33	LA Co. San Dist. 6	C	yes
34	Whittier City	HS, CC	city residents only

SUMMARY OF
LANDFILL OPERATIONS
LOS ANGELES COUNTY
MARCH, 1969

- COMPLETED
△ ACTIVE PRIVATE
□ ACTIVE PUBLIC



EXHIBIT B

Senate Concurrent Resolution No. 89

RESOLUTION CHAPTER 189

Senate Concurrent Resolution No. 89—Relative to mineral resources and reclamation of mined lands.

[Filed with Secretary of State October 8, 1971.]

WHEREAS, The mineral resources of the State of California are essential to the economy of the state, and are vitally supportive of every facet of various programs relating to housing, transportation, commerce, and industry; and

WHEREAS, At the present time, the State of California has no stated policy by which to encourage the development and utilization of the available remaining deposits of critical minerals in a manner which would gain maximum benefit from this bounty of nature and achieve maximum recreational, commercial, and industrial use benefit while protecting the environment to the greatest extent possible with respect to such operations; and

WHEREAS, The Committee on Surface Mining for the State of California, which was appointed November 26, 1968, by the Secretary of the Resources Agency to appropriately review and investigate the conditions of the surface mining industry in California, has concluded that the state currently lacks comprehensive advisory and regulatory capabilities with respect to, and has no fundamental state policy directed toward, the conservation of mineral resources, the conduct of surface mining, and the reclamation of mined lands, and emphasized the wisdom of devising appropriate statewide plans and policies well in advance of the promulgation of federal regulations; and

WHEREAS, The Congress of the United States now has before it for consideration at least eight bills regarding mined-land conservation, reclamation, or development, any one of which, if adopted, would directly affect surface mining operations within the State of California; and

WHEREAS, Twenty-two states have now adopted state plans for the operation of the mineral extractive industries within their states so as to preserve and insure sovereignty over such operations and to minimize the impact of imminent federal laws upon them which do not recognize the unique conditions existing in the several states; now, therefore, be it

Resolved by the Senate of the State of California, the Assembly thereof concurring, That the members hereby request the Division of Mines and Geology of the Department of Conservation, in concert with the State Mining and Geology Board,

to propose enabling legislation for the promulgation of administrative rules and regulations for the execution of a state mined lands reclamation and use plan which would be compatible with state land use policy; and be it further

Resolved, That the Division of Mines and Geology and the State Mining and Geology Board submit such proposed legislation to the Governor and to the Legislature not later than the fifth calendar day of the 1972 Regular Session of the Legislature; and be it further

Resolved, That the Secretary of the Senate transmit copies of this resolution to the Secretary of the Resources Agency, the Director of Conservation, the State Geologist, the Chairman of the State Mining and Geology Board, the Director of Public Works, the Director of State Planning and Research, the Chairman of the Senate Standing Committee on Natural Resources and Wildlife, and to the Chairman of the Assembly Standing Committee on Natural Resources and Conservation.

ROCK SPRINGS URBAN RENEWAL BOARD,
Rock Springs, Wyo., November 15, 1971.

HON. CLIFFORD P. HANSEN,
U.S. Senate, Washington, D.C.

DEAR SENATOR HANSEN: On behalf of the Rock Springs Urban Renewal Board, I take this opportunity to express explicit support for your bill, S. 1160, which would authorize the Secretary of Interior through the Bureau of Mines to make grants to several states to seal and fill voids in abandoned coal mines, and certain other relief.

In Rock Springs, there are several instances where subsidence, due to abandoned subsurface coal mines, has caused families to abandon their homes, without any hope of relief from any known source. Your bill, S. 1160, hope to those individuals who have, and will continue to suffer from subsidence in our community, is apparent.

An extension of the Appalachian Act, to include areas which also are subjected to similar problems, would be most timely and beneficial. In Rock Springs, the vitality and quality of life among the citizens could be affected in such a manner.

Senator, your first-hand knowledge of destruction brought about by subsidence, and your continued assistance and help in dealing with the problem is most appreciated by all concerned. We hope bill S. 1160 will have a successful conclusion.

Sincerely,

HYRUM B. FEDJE, *Executive Director.*

CITY OF ROCK SPRINGS,
Rock Springs, Wyo., November 19, 1971.

HON. CLIFFORD P. HANSEN,
U.S. Senate, Washington, D.C.

DEAR SENATOR HANSEN: I extend my full support to you in attempting to pass Senate File 1160, authorizing the Secretary of Interior through the Bureau of Mines to participate in funding mining problems due to abandoned coal mines.

Those of us in Rock Springs have experienced this disaster, and it is very disheartening to see people's homes become unliveable because of mine subsidence. It is a very helpless feeling to be unable to extend some sort of help to these individuals.

You are well aware of the fact that our City is heavily undermined in most areas and the extension of the Appalachian Act to include our city and those cities with similar problems would once again re-establish the confidence of our people, not only in living but in our Government.

Through your efforts we were fortunate in being the City chosen for a backfill pilot program, which proved to be very successful. With your continued support in pursuing S. 1160, we are hopeful that this backfill program can be extended.

With kind personal regards I remain

Yours sincerely,

PAUL J. WATAHA, *Mayor.*

INCOMPLETE LIST OF URBAN AREAS WHERE MINING HAS OCCURRED AND WHERE
IT MAY BE NECESSARY TO MAKE SPECIFIC STUDIES TO DETERMINE SUBSIDENCE
POTENTIAL

Alabama

Coal and iron mines; adjacent to Birmingham.

Arizona

Copper mines; Bisbee and Jerome.

Arkansas

Coal mines; Hartford, Montana, Paris and Spadra.

Colorado

Coal mines; Dacona, Firestone, Frederick, Lafayette and Louisville.
Lead-zinc mines; Leadville.

Idaho

Coal, silver, lead and zinc mines; Burke, Gem, Kellogg, Mullan, Murray and Smelterville.

Illinois

Portions of cities and towns probably underlain by mines include ; Belleville, Carbondale, Centralia, Danville, Decatur, Harrisburg, Herrin, Johnston City, Marion, Mount Vernon, Springfield, West Frankfort and Zeigler.
Lead-zinc mines underlie Galena.

Indiana

Coal mines ; Ashboro, Augusta, Boonville, Brazil, Carbon, Centerpoint, Chandler, Dugger, Evansville, Fort Branch, Francisco, Gibson, Hymera, Kings, Knightsville, Linton, Newburgh, New Geshen, Petersburg, Seelyville and Yankeetown.

Iowa

Coal mines ; Boone, Centerville, Des Moines, Knoxville, Oskaloosa and Ottumwa.

Kansas

Zinc-lead mines ; Galena and Treece.
Limestone mines ; Kansas City.
Coal mines ; Alma, Atchison, Burlingame, Cherokee, Croveburg, Franklin, Frontenac, Lansing, Leavenworth, Mineral, Mulberry, Osage City, Pittsburg, Pleasanton, Scammon, Scranton, Weir and Williamsburg.
Salt mines ; Hutchinson, Kanopolis, and Lyons.

Kentucky

Coal mines ; Madisonville.
Limestone mines ; Lexington.

Maryland

Dimension stone mines ; Cardiff.
Coal mines ; Frostburg.

Michigan

Iron mines ; Bessemer, Iron River, Ironwood, Ishpeming, Negaunee and Wakefield.
Salt mines ; Detroit.
Gypsum mines ; may be under Grand Rapids.
Copper mines ; adjacent to and probably underneath Calumet, Hancock and Houghton.

Minnesota

Iron mines ; Aurora, Biwabik, Chisholm, Eveleth, Hibbing and Keewatin.

Missouri

Zinc-lead mines ; Alba, Aurora, Caterville, Duenweg, Neck City, Oronoga, Purcell, Webb City and Wentworth.
Lead mines ; Annapolis, Boone Terre, Desloge, Doe Run, Flat River, Leadington, Leadwood, Valles Mines and Viburnum.
Coal mines ; Bevier, Brookfield, Bucklin, Gainsville, Cameron, Carrollton, Clifton Hill, Deepwater, Elmira, Farber, Huntsville, Kansas City, Kingston, Kirkville, Knoxville, Lexington, Macon, Marceline, Melbourne, Milan, Mindenmines, Missouri City, Montgomery City, New Cambria, Richmond, St. Louis, Trenton, Vibbard, Waverly, Wellington, Windsor and Winston.
Clay mines ; Deppwater and St. Louis.
Limestone mines ; Carthage, Kansas City and Neosho.
Sandstone mines ; Crystal City.

Montana

Copper mines ; Butte, Centerville and Walkerville.

Nevada

Gold and silver mines ; Tonopah and Virginia City.

New Jersey

Iron mines ; Dover, Hibernia, Mine Hill, Ringwood, Rockaway and Wharton.

New York

Iron mines ; Lyon Mountain, Mineville and Witherbee.

Ohio

Coal mines ; may underlie some urban areas in the southeastern portion of the State.
Salt mines ; Cleveland.

Oklahoma

Coal mines ; Bokoshe, Broken Arrow, Coalgate, Coalton, Cottonwood, Dewar, Haileyville, Hartshorne, Henryetta, Krebs, Lehigh, McAlester, McCurtain, Tulsa and Wilburton.

Zinc-lead mines ; Cardin, Commerce, North Miami, Peoria, Picher and Quapaw.

Oregon

Coal mines ; Coos Bay.

Iron mines ; Oswego.

Pennsylvania

Anthracite mines ; The Anthracite region and particularly the northern Anthracite field including Scranton and Wilkes-Barre.

Bituminous mines, portion of the following urban areas are undermined : Brownsville, Cannonsburg, Charleroi, Donora, Metropolitan Pittsburgh, Monongahela and Uniontown.

South Dakota

Gold mines ; Lead.

Virginia

Gypsum mines ; Plasterco.

Coal mines ; Norton.

Washington

Coal mines ; Bellingham, Black Diamond, Carbonado, Centralia, Chehalis, Cle Elum, Issaquah, Newcastle, Ravensdale, Renton, Ronald, Roslyn and Wilkeson.

Iron mines ; Hamilton.

Gold mines ; Chewelah, Republic and Wenatchee.

Lead-zinc-silver mines ; Leadpoint and Metaline.

West Virginia

Coal mines ; Barrackville, Bartley, Bradshaw, Fairmont, Fairview, Farmington, Grant Town, Monongah, Rivesville nad Welch.

Wisconsin

Lead-zinc mines ; Benton, Hazel Green, Mineral Point, New Diggings, Platteville, Shullsburg and Tennyson.

Iron mines ; Hurley and Montreal.

Wyoming

Coal mines ; Reliance and Rock Springs.

Based on the incidence of subsidence in the past, it is estimated that because of existing instability, some 750,000 surface areas of the remaining undermine six million acres will have been affected by subsidence by the year 2000. The amount of land that is expected to subside as a result of mining beneath an additional five million acres over the 1966-2000 period is 1,720,000 acres. The estimated total subsidence expected to occur between 1966 and the year 2000 therefore amounts to about 2.5 million acres. Remedial action to lessen subsidence incidents through backfilling and improved support techniques during actual mining operations in the future would tend to reduce the potential.

[From the Denver Post, Nov. 28, 1971]

WYOMING'S SINKING CITY

(By Zeke Scher)

THE PAST IS CATCHING UP WITH ROCK SPRINGS. ABANDONED COAL MINES ARE CAVING IN, AND WHAT'S HAPPENING SHOULDN'T HAPPEN TO ANYONE

Charlie and Nellie Bartram, each 67 years old, live in the southern part of Rock Springs, Wyoming's fourth biggest city. The address is 707 Connecticut Ave. They usually spend their evenings watching television in their home of 23 years. That's the way it was on a night in January 1968 when it "exploded" out back.

"We didn't know what it was," Nellie recalls, "and we couldn't see anything. It sure was loud. But I found out the next morning when I went out to dump the garbage. The house had pulled away from the steps."

That was only the beginning. On following evenings the late show was punctuated by cracks, rips and crunches as their home came apart at the seams.

Bartram, a retired Coors driver, stuffed rags and old underwear into some of the gaping wall cracks. But the house shifted, the cracks closed up as new ones opened, and he discovered he couldn't get any of his underwear out of the walls anymore.

There was more. Floors tilted. Two 350-page books were needed to prop up one corner of the bed. Doors wouldn't close. When the wind blew, which is often in southwestern Wyoming, dirt and snow and rain came through the house.

Mario and Frances Temperini, who lived next door at 711 Connecticut Ave., can tell about their night life on Jan. 16, 1968. A loud noise awakened them. The garage had pulled away from the home. On Feb. 25 the gas line into their house broke. Luckily, they smelled the gas.

Fearful of further such incidents, the Temperinis lived through a frigid winter period with windows kept open. On March 15 two inches of snow accumulated on their bed blankets. The couple concluded this was not the way to live and they abandoned their home—an investment of \$30,000—never to return.

Their plight was similar to that of Jim Groutag—across the street on the corner of Connecticut and D St.

After the furnace dropped into a hole in the basement, the house fell toward the north, then toward the east and finally it seemed to twist in all directions. The living room floor bulged up like an inverted boat. He moved out.

Ghosts? Earthquakes? Faulty construction? The answer is simple, yet strange and fearful: Rock Springs is sinking. The earth is subsiding into coal mines that underlay 80 per cent of the city of 11,657 persons.

They call the neighborhood around Connecticut Ave. and D St. "the damage area." But it is only one of 14 "high-risk subsidence areas" in Rock Springs—191 acres on which some 850 structures including schools, churches, businesses, municipal buildings and homes are threatened.

The people of Rock Springs are living with a potential multi-million-dollar disaster. For a dozen families the disaster isn't potential. It's *here*, and it's continuing.

What is being done about this? What can be done about it? Apparently the answer to both questions is: Very little.

The dilemma had its origins in Wyoming's pioneer days when the Union Pacific Railroad pushed into a new terminal called Blairtown, near the former Holladay Overland Stage station named Rock Springs. That was in 1868.

Coal was needed to fuel the iron horse and men began picking for it in the rich beds under Rock Springs. Some 100 million tons of coal were removed from about 500 acres beneath the present city before the mining companies went out of business. The primary mines varied in depth from 10 to 350 feet below the surface.

The railroad—No. 1 landowner—sold surface land little by little and Rock Springs grew. Deeds usually had a clause protecting the company against any liability for subsidence.

Small surface cave-ins due to mine tunnels occurred over the years but none caused extensive damage, or at least not enough to alarm anyone. Holes were filled, streets repaired and business went on as usual.

In mid-1967 the first evidence of subsidence was noted in the south Rock Springs area when a major water line broke. It was believed, somewhat wishfully, that the cause was the settling of unconsolidated sediments.

A soils investigation during the summer of 1967 concluded—erroneously, as it turned out—that complete saturation of the upper silty sand could account for at least 20 inches of settlement and additional surface subsidence in the area was "unlikely."

But early 1968 produced increasing damage to homes and streets. Mayor Paul J. Wataha and his city engineers asked the Wyoming Highway Department to make a geological study of the damage area.

It wasn't until late in January 1969 that highway department geologists conducted a drilling program on the subsiding ground. The diagnosis was alarming. Frank Morgando, state engineering geologist, said subsidence was due primarily to collapsing mine voids.

Wataha turned to the U.S. Bureau of Mines for help.

In July 1969 a mines bureau report by Ralph Whaite and Donald Donner concluded that a solution—backfilling the entire undermined area—would be “extremely difficult, expensive and impractical.” They also noted that subsidence occurred only in areas where the earth cover above the voids was less than 150 feet thick.

This meant that about 200 acres beneath built-up portions of Rock Springs required back-fill support. The endangered land was located in 14 designated “high-risk subsidence areas.” (An engineering firm later estimated it would cost more than \$3 million for backfilling those high-risk areas.)

While the engineers, geologists and public officials grappled with the problem, frustrated residents of a dozen homes in the damage area lived with danger and anxiety.

They couldn't just move away because the homes constituted the major part of their personal savings. And they couldn't just make permanent repairs because the earth continued to sink.

Financial loss weighed heavily on the homeowners. But even more pressing was the daily threat to life from a ruptured gas or electric line.

Fear of possible fire and explosion spread beyond the neighborhood.

“The factor of uncertainty in all aspects of the situation greatly magnifies the damage,” a technical report for the U.S. Department of Housing and Urban Development (HUD) says. “In natural disasters, the damage normally occurs swiftly; it is then over and remedial steps can be taken at once. Even though the damage may be great, its extent is soon known and personal and public decisions may be made. This is not true of subsidence that occurs over a period of many months or years.”

The report pointed out that the value of 17 homes in the damage area had dropped from about \$225,000 to “no more than \$120,000”—an average loss in value of 44 per cent. But there were no sales because there are no takers.

In the spring of 1970 the city asked HUD for \$186,861 to conduct a test for filling the mine voids under the damage area, using a hydraulic process developed by the Dowell Division of Dow Chemical Co.

The Dowell process involved drilling a well into a mine void and injecting at high speed a huge amount of sand-and-water slurry. This technique promised to fill a greater portion of mine voids from a single hole than any other method. It was expected that sand would be distributed radially in the mine for 500 to 1,500 feet.

HUD approved a grant of \$175,140. The Bureau of Mines chipped in \$55,000 and Dowell contributed \$20,000. In all, a quarter million dollars would be spent pumping sand and water down a hole in the ground.

The test was programmed to plug up the inaccessible voids beneath the damage area within a radius of 225 feet from the injection hole with 20,000 cubic yards of sand.

Dowell engineers came to town with huge equipment and a four-phase plan: 1—Investigate the mine cavity; 2—Develop the well system and obtain the sand; 3—Inject the 20,000 cubic yards into the void; 4—Evaluate the project's success.

Phase I—location of the mine void under the neighborhood—took eight days. The engineers had expected this could be done by drilling four holes, but it took six to locate the void. In all, 11 holes were drilled. Water obtained in the drilling was tested and proven satisfactory for use in making the slurry.

Hole No. 10 was picked as the best injection well. The void was 123 feet below the surface. The hole was located in the center of Rhode Island Avenue, south of D Street and one block west of Connecticut Avenue. (It would slowly dawn on homeowners in the damage area that the proposed 225-foot radius of backfill did not reach to their property on Connecticut Avenue.)

One block west of the injection hole was Massachusetts Avenue and the playground of Yellowstone Elementary School. This was the site chosen for stockpiling the mountain of sand and for setting up the water tanks, slurry blenders and pumps. The water was piped in a half block from two wells on D Street. Twelve inch pipe would carry the slurry a block and a half to the injection hole.

It took 59 days to complete Phase II—preparing all the equipment and trucking in all the sand from west of Rock Springs. (Thirty residents of the area were later surveyed and all but one strongly supported the project. The one felt the project was too late to help. Many said the noise, dust, traffic and vibration were disturbing.)

Phase III—the pumping—began Oct. 26, 1970, shortly after noon. The crew shut down for the day at 4 p.m. Apparently schoolchildren had thrown some rocks into the sandpile and these were causing trouble in the slurry blender, A little screening would be necessary.

Oct. 27 saw 21 continuous hours of pumping with about 6,000 cubic yards going down the tube. Next day, low electrical voltage reduced pumping to nine hours. More rocks and low voltage on Oct. 29 cut back the work to less than three hours, it took 10 days to complete the job.

Phase IV—Dow's next evaluation—took 40 days while the firm took sonar soundings and evaluated them.

"These surveys verify that the fill material moves out over the top from an early established donut shape around the wellbore to progressively fill the mine void in a radial manner," the report said. "Observation holes located southeast, east and northwest of the injection hole verified significantly total fill of mine height within the 225-foot preplanned radius with little or no fill beyond."

The Dowell appraisal didn't sound bad. But another exhaustive evaluation raised many questions.

U.S. Bureau of Mines drilled 36 boreholes and correlated their information with previous data. All the findings were then evaluated by Mines engineers, Morgando of the highway department and by Johnson-Fermelia & Crank, Inc., Rock Springs consulting engineers.

It was the consensus of this evaluation team that the pattern of sand-fill did not form a circular shape around the injection hole, most of the sand following paths of least resistance to the northeast, east and southeast. This meant that heavily caved strata below the intersection of Connecticut and D St. had effectively blocked the flow of sand into that critical area.

The HUD-sponsored technical report stated:

"Although the project failed to achieve the relatively complete filling of the mine voids within the predicted circular area, it clearly demonstrated that the closed system hydraulic technique is capable of filling a much greater portion of a mine from a single borehole than other known techniques."

The report was hopeful but it offered little consolation to the homeowners. Across Connecticut Avenue, at least one family has noticed increased damage since the test project was completed.

Mrs. Arletta Smith lives at 715 Connecticut Ave., next door to the abandoned Temperini house, with her husband, John, and two children. Their home of 11 years is set back from the street, behind an obviously sinking front yard.

"Lately we sit in the living room and watch the cracks go across the wall," she says. "It seemed that the basement cracks became particularly bad after the sand-filling experiment."

The Smiths, like the others remaining in the neighborhood, constantly engage in make-do patchwork and put up with frequent street closings, water line breaks and shifting land.

Mario Temperini, a 46-year-old native of Rock Springs and district office manager of Pacific Power & Light Co., is particularly bitter.

"I can't move the house and I can't give it away," he says. "There's no insurance available on subsidence damage. The only thing I can collect on is a broken window."

"The backfilling test didn't help us a bit. This is like a death in the family. Everybody feels sorry and then forgets. You don't realize the loss until it happens to you."

"In a way it's like an act of God, but it seems that something could be done to help. Some officials have the gall to say this isn't a disaster. I'd like to know what a disaster is."

He feels that the city should purchase the entire damage area and make a park. After 29 months in an apartment, he recently purchased a mobile home.

Mayor Wataha, a 44-year-old accountant serving his sixth term, is caught in the middle.

"No one wants to take responsibility for this," he says. "The old coal companies took every nickel of coal out and now they're out of business."

The Union Pacific has avoided liability although it owned a major coal company. However, as a gesture last spring, the UP gave the city \$10,000.

Wataha is unhappy that the test project failed to help those in the damage area. Only time will tell if it helps anybody. The mayor says the city hasn't the funds—certainly not the more than \$3 million estimated—needed to fill in 191 acres of mine voids under the 14 high-risk subsidence areas.

The city has applied for Community Renewal and Neighborhood Development Program funds from HUD but at this stage there appears to be no federal money for any subsidence relief.

Roughly 17 per cent of Rock Springs' population—some 2,400 persons—reside in the high-risk areas. That involves 850 buildings. The HUD analysis says:

"Large human and economic values are continuously in jeopardy throughout the subsidence risk area. Unless the subsidence is arrested, extensive damage can be expected and the constant threat of such damage will take its own toll . . ."

Moreover, the study added, damage in the Connecticut and D neighborhood probably hasn't run its course.

This story has no happy ending. In fact, it has no ending at all. The people of Rock Springs will continue to live with uncertainty. Wyoming's fourth largest city is in a hole in more ways than you can count.

WAUWATOSA, WIS., October 14, 1971.

HON. GAYLORD NELSON,
Senate Office Building,
Washington, D.C.

DEAR SENATOR NELSON: In October of 1970, and again in April of 1971, I wrote to you in regard to legis'ation dealing with surface mining. I wish to thank you for your help and for your support of Mr. Hechler's measure in the Senate.

Now it appears that new bills have been introduced. I would like to have your evaluation of the following:

S. 2455—Sen. Moss; S. 77; S. 630 (companion to H.R. 60); S. 993 (companion to H.R. 4704); S. 1160; S. 1240.

I am sorry I am unable to further identify these.

I understand that the Senate Interior Committee has scheduled hearings on November 16 & 17. Please convey to the committee my support of a ban (at least a temporary halt) on strip mining.

I have the pleasure of speaking for the *John Muir Chapter* of the *Sierra Club* on our support of your bill, in the Senate, and H.R. 5689 and H.R. 4556 in the House. If possible, I would like to have you record our support for these measures on the occasion of the hearings.

Thank you again for your continued excellent representation.

Sincerely,

JOHN N. LEES, JR.

WAUWATOSA, WIS., October 15, 1971.

HON. HENRY JACKSON,
Chairman, Senate Interior Committee, Senate Office Building, Washington, D.C.

DEAR SENATOR JACKSON: I understood that hearings on the subject of strip mining will be held on November 16 and 17.

I have the pleasure of speaking for the *John Muir (Wisconsin) Chapter* of the *Sierra Club* on our position of support for the bill S. 1498. If possible, I would like to have you record our support for this bill at the forthcoming hearing.

Please consider the seriousness of the devastation caused by strip mining. and try to understand that at least a temporary halt to the practice is required. The strip mining situation has gotten out of control.

I thank you for your kind help and look forward to reading your evaluation of the present situation.

Sincerely,

JOHN N. LEES, JR.

WAUWATOSA, WISC., October 15, 1971.

HON. WILLIAM PROXMIRE,
Senate Office Building,
Washington, D.C.

DEAR SENATOR PROXMIRE: In April of 1971 I wrote to you in regard to legislation dealing with surface mining, seeking your support of a bill introduced in the house by Mr. Hechler, HR 4556.

I have since learned that companion legislation has been introduced in the Senate by Senator Nelson, S 1498.

I urge you to support this bill in the forthcoming hearings, November 16 and 17. Please convey my support to the Senate Interior Committee.

I have the pleasure of speaking for the *John Muir* (Wisconsin) *Chapter* of the *Sierra Club* on our position of support for this bill. If possible, I would like to have your record our support for this bill at the forthcoming hearing.

Please consider the seriousness of the devastation caused by strip mining, and try to understand that at least a temporary halt to the practice is required. The strip mining situation has gotten out of control.

I thank you for your kind help in the past and look forward to reading your evaluation of the present situation.

Sincerely,

JOHN N. LEES, Jr.

1 partnership, firm, association, company, society, joint
2 stock company, corporation, or other entity.

3 (3) The term "reclamation" or "reclaim" means
4 the process of restoring an area of land affected by strip
5 mining (including auger mining) to a condition where
6 its surface value is at least as great as it was prior to the
7 beginning of the strip mining and where it may be used
8 for the same purposes for which it was used prior to the
9 beginning of the strip mining. In any reclamation process
10 a prime consideration should be the maintenance of the
11 maximum ecological value.

12 (4) The term "commerce" means trade, traffic,
13 commerce, transportation, or communication between
14 any State, the Commonwealth of Puerto Rico, the Dis-
15 trict of Columbia, or any territory or possession of the
16 United States and any place outside the respective bound-
17 aries thereof, or wholly within the District of Columbia
18 or any territory or possession of the United States, or be-
19 tween points in the same States, if passing through any
20 point outside the boundaries thereof.

21 (5) The term "surface mine" means (A) any area
22 of land from which minerals are extracted from their
23 natural deposits by strip mining, (B) private ways
24 and roads appurtenant to such area, and (C) lands,

1 excavations, workings, culm banks, refuse banks, dumps,
2 spoil banks, structures, facilities, equipment, machines,
3 tools, or other property on the surface, resulting from,
4 or used in, extracting minerals from their natural deposits
5 by strip mining methods or the onsite processing of such
6 minerals.

7 (6) The term "Secretary" means the Secretary of
8 the Interior; and

9 (7) The term "strip mining" includes auger mining.

10 PERMIT FOR SURFACE MINING

11 SEC. 3. (a) On and after the effective date of this Act,
12 each surface mine, the products of which enter interstate
13 commerce or the operations of which affect interstate com-
14 merce, shall be subject to the provisions of this Act.

15 (b) On and after the effective date of this Act no
16 person shall engage in or carry out any activity with respect
17 to the extraction of minerals from a surface mine subject
18 to the provisions of this Act by strip mining methods, unless
19 such person has first obtained a permit from the Secretary
20 in accordance with the provisions of this Act.

21 (c) In furtherance of the policy of this Act, the Secre-
22 tary is authorized, whenever he determines that it would
23 effectuate the purposes of this Act, to cooperate and consult
24 with appropriate Federal and State agencies.

1 APPLICATIONS FOR PERMIT

2 SEC. 4. (a) Each application for a permit under this
3 Act shall be made in writing to the Secretary, upon forms
4 prepared and furnished by him. The application, in addition
5 to such other information as may be required by any regu-
6 lation issued under this Act, shall contain—

7 (1) the name and address of the applicant;

8 (2) a description of the land upon which the appli-
9 cant proposes to engage in strip mining operations, stat-
10 ing the name of the State, county, township, and mu-
11 nicipal corporation, if any, in which such land is located;
12 the location of its boundaries; and any further description
13 so that the lands may be located and distinguished from
14 other lands with sufficient certainty;

15 (3) an estimate of the number of acres of land
16 directly involved;

17 (4) the name and address of the owner of the
18 land upon which the applicant proposes to engage in
19 strip mining;

20 (5) the written consent of the owner of the sur-
21 face of the land upon which the applicant proposes to
22 engage in strip mining stating that the applicant or
23 his agents and any officer, employee, or agent of the
24 Federal Government may, at any time within a five-
25 year period immediately after the operation is com-

1 pleted or abandoned, enter upon such land for the pur-
2 pose of inspection and reclamation;

3 (6) the name and address of the owners of all sur-
4 face areas within five hundred feet of any part of the
5 proposed area of affected land;

6 (7) a statement of whether any strip mining per-
7 mits are held by the applicant and, if any, the numbers
8 of such permits;

9 (8) the name and address of every officer, partner,
10 director, or person performing a function similar to a
11 director, of the applicant, together with the name and
12 address of any person owning, of record or beneficially,
13 either alone or with associates, 10 per centum or more
14 of any class of stock of the applicant;

15 (9) a statement of whether the applicant, any sub-
16 sidiary, affiliate, or persons controlled by, or under com-
17 mon control with, the applicant has ever had a strip
18 mining license or permit, issued by any State, suspended
19 or revoked, or has ever had a strip mining bond, or
20 security deposited in lieu of bond, forfeited; and

21 (10) a complete plan of reclamation for the area
22 of land to be affected by the operation for which such
23 permit is sought, including, but not limited to, an ex-
24 planation of the method of strip mining to be used in
25 such operation, a description of the engineering tech-

1 nique to be used in such operation including information
2 with respect to the character and description of the
3 equipment to be used, a description of the system or
4 method to be used to prevent harmful surface water
5 drainage and water accumulation in the pit, a plan for
6 backfilling, grading, resoiling, and revegetation, and a
7 time schedule for completion of each of the phases and
8 an estimate of the cost per acre of the reclamation.

9 (b) The application for a permit under this section shall
10 be accompanied by a fee in such amount as may be prescribed
11 by regulations issued under this Act.

12 (c) During the term of the permit the operator may
13 apply to the Secretary for a revision of the permit. The Sec-
14 retary may grant the operator such revision if he finds that
15 such a change would protect the ecological value of the land
16 which is being strip mined.

17 APPROVAL OF APPLICATION FOR PERMIT

18 SEC. 5. (a) Upon the filing of an application under
19 section 4 of this Act, the Secretary shall investigate and may
20 approve or disapprove the application. No application for a
21 permit shall be approved if the Secretary finds, on the basis
22 of the information set forth in the application, or on the basis
23 of information available to him and made available to the
24 applicant, that the requirements of this Act, or standards and
25 regulations adopted thereunder will not be observed, that an

1 area of critical environmental concern or historical value
2 would be destroyed by the proposed strip mining, or that
3 there is probable cause to believe that the reclamation of the
4 area of affected land cannot be achieved.

5 (b) No permit application shall be approved unless the
6 plan of operation and reclamation required under section
7 4 (a) (10) of this Act is approved by the Secretary.

8 (c) The Secretary shall notify the applicant by regis-
9 tered mail within thirty days after the receipt of the com-
10 pleted application whether the application has been ap-
11 proved. If the Secretary fails to notify the applicant within
12 the prescribed period, the applicant may request in writing
13 a hearing before the Secretary. The hearing shall be held
14 within thirty days after receipt of the request.

15 (d) After the application is approved, but before the
16 permit is issued, the Secretary shall determine the amount
17 of bond per acre that the operator shall furnish. The amount
18 of the bond shall be determined on the basis of the antici-
19 pated costs of carrying out the reclamation plan, but in no
20 event shall the bond be in an amount less than \$1,000 for
21 each acre to be reclaimed, and in no case less than \$10,000
22 for any strip mine operation. The amount of bond shall be
23 stated in the notice of approval sent to the applicant.

24 (e) If the application is not approved, the Secretary
25 shall state the reasons for its unacceptability and may pro-

1 pose modifications in the plan, delete areas of land from the
2 proposed area of operation, or reject the plan entirely. If
3 the applicant disagrees with the decision of the Secretary,
4 he may request in writing a hearing before the Secretary.
5 The Secretary shall hold such hearing within thirty days
6 after receipt of the request.

7 (f) Any order or decision by the Secretary under this
8 section shall be subject to judicial review by the United
9 States court of appeals for the circuit in which the proposed
10 strip mine is located, or the United States Court of Appeals
11 for the District of Columbia circuit, upon the filing in such
12 court, within thirty days from the date of such order or
13 decision by the Secretary, of a petition by such applicant
14 praying that such order or decision be modified, or set aside
15 in whole or in part, except that the court shall not consider
16 such petition until such applicant has exhausted all adminis-
17 trative remedies available to him under this Act.

18 (g) The court shall hear such petition on the record
19 made before the Secretary. The findings of the Secretary,
20 if supported by substantial evidence on the record con-
21 sidered as a whole, shall be conclusive. The court may
22 affirm, vacate, or modify any such order or decision of the
23 Secretary, or may remand the proceedings to the Secretary
24 for such future action as it may direct.

PERFORMANCE BOND

1
2 SEC. 6. (a) After a permit application has been ap-
3 proved, but before a permit is issued, the applicant shall file
4 with the Secretary a bond for performance, on a form
5 prescribed and furnished by the Secretary, payable to him
6 as Secretary and conditioned that the operator shall faith-
7 fully perform all the requirements of this Act and regula-
8 tions issued pursuant thereto. The amount of the bond re-
9 quired for each permit shall depend upon the reclamation
10 requirements, and shall be determined by the Secretary as
11 provided in section 5 of this Act. Liability under the bond
12 shall continue for as long as strip mining is conducted at the
13 operation site described in the permit for which such bond
14 is posted and for a period of five years thereafter, unless
15 released sooner as provided in section 11 of this Act. The
16 bond shall be executed by the operator and a corporate
17 surety licensed to do business in the State where such opera-
18 tion is located. The operator may elect to deposit cash, nego-
19 tiable bonds of the United States Government or of any
20 State, or negotiable certificates of deposit having a par value
21 equal to, or greater than, the amount of the surety bond and
22 issued by any bank organized or transacting business in the
23 United States.

24 (b) Cash or securities so deposited shall be deposited

1 upon the same terms as the terms upon which surety bonds
2 may be deposited. If one or more negotiable certificates of de-
3 posit are deposited with the Secretary in lieu of the surety
4 bond, he shall require the bank which issued such certificate
5 to pledge securities of the aggregate market value equal to
6 the amount of such certificate or certificates in excess of the
7 amount insured by the Federal Deposit Insurance Corpora-
8 tion. Such securities shall be security for the repayment of
9 such negotiable certificates of deposit.

10 (c) Upon the receipt of the deposit of cash or securities,
11 the Secretary shall immediately place the deposit with the
12 Secretary of the Treasury, who shall receive and hold the
13 deposit in safekeeping in the name of the United States, in
14 trust for the purpose for which the deposit was made. The
15 operator making the deposit may, from time to time, demand
16 and receive from the Secretary of the Treasury, on the writ-
17 ten order of the Secretary of the Treasury, the whole or any
18 portion of the deposit if other acceptable securities of at least
19 the same value are deposited in lieu thereof. The operator
20 may demand of the Secretary of the Treasury and receive
21 the interest and income from the securities as they become
22 due and payable. When deposited securities mature, or are
23 called, the Secretary of the Treasury shall, upon the request
24 of the operator, convert the securities into other acceptable
25 securities.

1 (d) After the permit application has been approved, and
2 the bond or deposit filed, the Secretary shall issue a permit
3 to the applicant. Within ten days after such issuance, the
4 Secretary shall notify the State and the local official who has
5 the duty of collecting real estate taxes in the local political
6 subdivision in which the area of land to be affected is located
7 that a permit has been issued and shall describe the location
8 of the land.

9 STRIP MINING RECLAMATION FUND

10 SEC. 7. (a) There is hereby created in the Department
11 of the Treasury a revolving fund to be known as the Strip
12 Mine Reclamation Fund (hereinafter referred to as the
13 fund).

14 (b) There is authorized to be appropriated to the fund
15 initially the sum of \$100,000,000 and such other sums as
16 may thereafter be appropriated by the Congress.

17 (c) Moneys in the fund may be expended by the Sec-
18 retary for the purposes indicated in section 8 of this Act.

19 (d) Fines or fees which have been collected and any
20 bond or deposit which has been forfeited under this Act shall
21 be deposited in the fund.

22 (e) Moneys derived from the sale, lease, or rental of
23 reclaimed land shall be deposited in the fund.

24 (f) Moneys derived from any user charge imposed upon
25 reclaimed land used for recreation purposes, after expendi-

1 tures for maintenance have been deducted, shall be deposited
2 in the fund.

3 ACQUISITION OF RECLAIMED LAND

4 SEC. 8. (a) The Secretary may acquire by purchase,
5 donation, or otherwise, land, or any interest therein, which
6 has been affected by strip mining and has not been reclaimed.
7 Title to all lands acquired shall be taken in the name of
8 the United States, but no deed shall be accepted or purchase
9 price paid until the title thereof is approved by the Attorney
10 General. The price paid for land under this section shall
11 take into account the unrestored condition of the land.

12 (b) The Secretary shall prepare plans and specifications
13 for the reclamation of lands (including any culm bank)
14 acquired under this section. In preparing a plan of reclama-
15 tion the Secretary may utilize the specialized knowledge or
16 experience of any Federal department or agency which can
17 assist him in the development or implementation of the recla-
18 mation program required under this section. The Secretary
19 may, with the approval of the administrator of the depart-
20 ment or agency involved call to his assistance temporarily
21 any engineer or other personnel of any Federal department
22 or agency. The engineers and employees shall not receive
23 any additional compensation other than that which they
24 receive from the department or agency by which they are
25 employed, but they shall be reimbursed for their actual and

1 necessary expenses incurred while working under the direc-
2 tion of the Secretary.

3 (c) The Secretary shall reclaim the lands (including
4 any culm banks), according to the prepared plans, as mon-
5 eys become available to the fund.

6 (d) Administration of all lands restored under this
7 section shall be in the Secretary until disposed of by him
8 as set forth in this Act.

9 (e) The Secretary may use moneys from the fund for
10 the engineering, administrative, and research costs neces-
11 sary for reclamation of the lands.

12 (f) Money in the fund resulting from the forfeiture
13 of the surety bond, or from other securities deposited by an
14 applicant and not reclaimed by him as required by this Act,
15 the Secretary shall use such money first for reclamation of
16 the land covered by the forfeited bond or deposit.

17 (g) Where reclaimed land is deemed to be suitable for
18 industrial, residential, or private recreational development,
19 the Secretary may sell such land at a fair price under such
20 regulations as he may promulgate to insure that such lands
21 are put to a proper use, as determined by the Secretary.

22 (h) The Secretary may direct that reclaimed land may
23 be improved for water-based or other recreational puposes,
24 and that a reasonable user charge shall be imposed. Revenue
25 derived from such reclaimed lands shall be used first to

1 assure proper maintenance, and any remaining moneys shall
2 be deposited in the fund.

3 REVOCATION OF PERMITS

4 SEC. 9. (a) The Secretary may revoke any permit
5 issued under this Act if, after a public hearing, he deter-
6 mines that the operator has violated any provision of this
7 Act or any standard or regulation issued pursuant to this
8 Act.

9 (b) Upon petition by 40 per centum of the adult resi-
10 dents of the local government unit in which the strip mine is
11 located, the Secretary may, at his discretion, hold a public
12 hearing to determine whether or not the operator is comply-
13 ing with the terms of his permit and to determine whether or
14 not such permit should be revoked.

15 REGULAR REPORTS

16 SEC. 10. On or before the expiration of each six-month
17 period following the date of the enactment of this Act, the
18 operator of a strip mining operation shall file a report with
19 the Secretary, on a form provided by the Secretary, that
20 accurately states the number and location of acres of land
21 mined, and the number and location of acres of land re-
22 claimed. An annual report containing the same information
23 as the six-month report, plus maps detailing the progress
24 made on the reclamation plan, shall be filed with the Secre-
25 tary not later than the 25th day of January of each year.

RELEASE OF BOND

SEC. 11. (a) Two full years after the completion of the planting of an area of land affected by strip mining, the operator may file a request, on a form provided by the Secretary, for the release of the bond required under this Act. The request shall state—

(1) the location of the area and number of acres;

(2) the permit number;

(3) the amount of bond; and

(4) the type and date of planting of vegetative cover and the degree of success of growth.

(b) An inspection and evaluation of the reclamation of the area shall be made within twenty days after the filing of the request. If the Secretary finds that the reclamation meets the requirements of this Act he shall send by registered mail to the operator a release of such bond or other security. He shall also at the same time send a copy of the release to the Secretary of the Treasury. Upon presentation of the release to the Secretary of the Treasury by the operator to whom it was issued, the Secretary of the Treasury shall deliver to the operator, or his authorized agent, the amount of such bond or other security.

(c) If the Secretary does not approve the reclamation performed by the operator, the Secretary shall notify the operator by registered mail within twenty days after the

1 filing of the request. The notice shall state the reasons for
2 such disapproval and shall recommend actions to remedy
3 the deficiencies.

4 (d) No bond shall be released until the provisions of
5 this section are met.

6 STANDARDS

7 SEC. 12. (a) Within six months following the date of
8 the enactment of this Act, the Secretary, in consultation
9 with the Strip Mining Advisory Commission established
10 under this Act, shall, in accordance with the procedures
11 set forth in this section, develop, promulgate, and revise
12 as may be appropriate, mandatory standards covering strip
13 mining operations subject to this Act, including reclama-
14 tion programs in connection therewith.

15 (b) In the development of such standards, the Secre-
16 tary and the Strip Mining Advisory Commission shall con-
17 sult with other interested Federal agencies, representatives
18 of State agencies, appropriate representatives of mining op-
19 erators and miners, other interested persons and organiza-
20 tions, and the interested Governors of the several States.

21 (c) Such standards shall be based upon criteria de-
22 veloped on the basis of research, demonstrations, experi-
23 ments, and such other information as may be appropriate.

24 (d) Such standards shall consider the nature of the
25 industry involved and any regional differences which would

1 require variations of applicable standards in order to insure
2 maximum ecological benefit.

3 (e) Such standards shall not become effective unless
4 the Secretary has first published such standards in the Fed-
5 eral Register and afforded interested persons a period of not
6 less than thirty days after publication to submit written data
7 or comments. Except as provided in subsection (f) of this
8 section, the Secretary may, upon the expiration of such
9 period and after consideration of all relevant matter pre-
10 sented, promulgate such standards with such modifications
11 as he may deem appropriate.

12 (f) On or before the last day of any period fixed for
13 the submission of written data or comments under sub-
14 section (e) of this section, any interested person may file
15 with the Secretary written objections to a proposed stand-
16 ard, stating the grounds therefore and requesting a public
17 hearing by the Secretary on such objections. As soon as
18 practicable after the period for filing such objections has
19 expired, the Secretary shall publish in the Federal Register
20 a notice specifying the proposed standards to which objec-
21 tions have been filed and a hearing requested.

22 (g) Promptly after any such notice is published in the
23 Federal Register by the Secretary under subsection (f) of
24 this section, the Secretary will issue notice of and hold a
25 public hearing for the purpose of receiving relevant evidence.

1 Within sixty days after completion of the hearing, the Sec-
2 retary shall issue a public report setting forth his findings
3 of fact and views on such objections. Thereafter, the Secre-
4 tary may promulgate such standards with such modifications,
5 or take such other action, as he deems appropriate. Any such
6 standard so promulgated shall be effective upon publication
7 in the Federal Register unless the Secretary specifies a later
8 date.

9
ADVISORY COMMISSION

10 SEC. 13. (a) There is established the Strip Mining
11 Advisory Commission (hereinafter referred to as the "Com-
12 mission"), which shall be composed of nine members, of
13 whom three members shall be designated by the Secretary of
14 the Interior, three members designated by the Secretary of
15 Agriculture, and three members designated by the Admin-
16 istrator of the Environmental Protection Agency. Not more
17 than six members of the Commission appointed from non-
18 governmental sources shall be, by training and experience,
19 qualified in matters relating to strip mining.

20 (b) It shall be the duty of the Commission to consult
21 with and advise the Secretary with respect to the establish-
22 ment of standards and regulations necessary for the purposes
23 of this Act.

24 (c) A member of the Commission who is not an em-
25 ployee of the Federal Government, or of any State or local

1 government, while performing Commission business, shall
2 be entitled to receive the daily equivalent of the annual rate
3 of base pay in effect for grade GS-18 of the General Sched-
4 ule for each day including traveltime during which he is
5 engaged in the actual performance of his duties as a member
6 of the Commission. While so serving away from their homes
7 or regular places of business, such members shall be paid
8 travel expenses and per diem in lieu of subsistence at rates
9 authorized by section 5703 of title 5, United States Code,
10 for persons employed intermittently.

11 **PENALTIES**

12 SEC. 14. (a) Whoever knowingly violates any provision
13 of this Act, or any standard or regulation issued pursuant
14 thereto, shall be fined not more than \$50,000, or imprisoned
15 for not more than two years, or both.

16 (b) Whenever a corporation or other entity violates
17 any such provision, standard, or regulation, any director,
18 officer, or agent of such corporation or entity who author-
19 ized, ordered, or carried out such violation shall be subject
20 to the same fines and imprisonment as provided for under
21 subsection (a) of this section.

22 **STATE ENFORCEMENT**

23 SEC. 15. (a) Upon petition by a State, and upon a find-
24 ing by the Secretary that the State law with respect to strip
25 mining is consistent with the provisions of this Act and that

1 State enforcement is adequate to insure compliance with the
2 law, the Secretary may delegate to the State the authority
3 to enforce the provisions of this Act in such State.

4 (b) The Secretary shall prepare and issue regulations
5 covering the delegation of authority set forth in this section.
6 Such regulations shall be published in the Federal Register
7 and comment shall be invited from all interested parties.

8 (c) Before the Secretary delegates the authority for
9 the enforcement of any sections of this Act to a State, he
10 shall make public his intention to do so and shall hold
11 a public hearing at a convenient location within such State
12 where interested parties may appear and present testimony
13 on the effect of such delegation.

14 (d) The Secretary shall maintain a close surveillance
15 over State enforcement of this Act and shall require, at
16 least annually, reports from such States which will permit
17 him to judge the effectiveness of such enforcement. When
18 on the basis of such reports, or on other evidence avail-
19 able to him, the Secretary finds that such enforcement is
20 not carrying out the intent of the Congress as set forth
21 herein, he shall promptly terminate such State enforce-
22 ment and he shall carry out such enforcement with Federal
23 personnel.

24 (e) The Secretary shall report to the Congress each

1 year on the effectiveness of State legislation with respect
2 to strip mining.

3 ANNUAL REPORT

4 SEC. 16. On or before February 15 of each year, the
5 Secretary shall file a detailed report with the Congress
6 covering the progress made in regulating strip mining and
7 providing for reclamation during the preceding calendar year,
8 together with his recommendations for such legislative or
9 administrative action he deems appropriate to carry out the
10 purposes of this Act.

11 PREEMPTION OF STATE LAW

12 SEC. 17. (a) No State law (or standard or regulation
13 established or issued pursuant thereto) in effect on the effective date of subsection (a) of section 3 of this Act, or which
14 may become effective thereafter, shall be superseded by any
15 provision of this Act, except insofar as such State law, standard, or regulation is inconsistent with the provisions of this
16 Act.

17 (b) The provisions of any State law (or standard or
18 regulation established or issued pursuant thereto) in effect
19 upon the effective date of subsection (a) of section 3 of this
20 Act, or which may become effective thereafter, which provides for more stringent control and regulation of strip mining
21 than do the provisions of this Act (including standards and
22
23
24

1 regulations established or issued pursuant thereto) shall not
2 thereby be construed to be inconsistent with this Act. The
3 provisions of any State law (including standards or regula-
4 tions established or issued pursuant thereto) in effect on the
5 effective date of subsection (a) of section 3 of this Act, or
6 which may become effective thereafter, which provide for the
7 control and regulation of strip mining for which no provision
8 is contained in this Act, shall not be construed to be incon-
9 sistent with this Act.

10 STAFF; AUTHORIZATION

11 SEC. 18. (a) The Secretary may establish within the
12 Department of the Interior a sufficient staff to carry out the
13 provisions of this Act.

(b) There are hereby authorized to be appropriated such sums as may be necessary to carry out the purposes of this Act.

17 EFFECTIVE DATE

SEC. 19. Subsections (a) and (b) of section 3, and section 14 of this Act, shall take effect on and after one hundred and eighty days following the date of the enactment of this Act. All other provisions of this Act shall take effect upon the date of enactment of this Act.

92D CONGRESS
1ST SESSION

H. R. 4556

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 18, 1971

Mr. HECHLER of West Virginia (for himself, Mr. ROUSH, Mr. SANDMAN, Mr. SARBANES, Mr. SEIBERLING, Mr. VANDER JAGT, Mr. VANIK, Mr. WILLIAMS, and Mr. MIKVA) introduced the following bill; which was referred to the Committee on Interior and Insular Affairs

A BILL

To provide for the control of surface and underground coal mining operations which adversely affect the quality of our environment, and for other purposes.

- 1 *Be it enacted by the Senate and House of Representa-*
 2 *tives of the United States of America in Congress assembled,*
 3 That this Act shall be cited as the "Environmental Protec-
 4 tion and Enhancement Act of 1971."

DEFINITIONS

6 SEC. 2. For the purposes of this Act, the term—

7 (1) "Administrator" means the Administrator of
 8 the Environmental Protection Agency;

9 (2) "Commerce" means trade, traffic, commerce,
 10 transportation, or communication between any State,

1 the Commonwealth of Puerto Rico, the District of Co-
2 lumbia, or any territory or possession of the United
3 States and any other place outside the respective bound-
4 aries thereof, or wholly within the District of Columbia,
5 or any territory or possession of the United States, or
6 between points in the same States, if passing through
7 any point outside the boundaries thereof;

8 (3) "Coal" includes bituminous coal, lignite, and
9 anthracite;

10 (4) "Coal mine" means an area of land and all
11 structures, facilities, machinery, tools, equipment, shafts,
12 slopes, tunnels, excavations, and other property, real or
13 personal, placed upon, under, or above the surface of
14 such land by any person, used in, or to be used in, or
15 resulting from, the work of extracting in such area coal
16 from its natural deposits in the earth by any means or
17 method, and the work of preparing or processing the
18 coal so extracted, and includes custom coal preparation
19 facilities;

20 (5) "Surface coal mine" means any surface mine
21 from which coal is extracted from its natural deposits
22 in the earth by surface mining;

23 (6) "Surface mining" means the mining of coal
24 from a surface coal mine after removal of all or part of
25 the overburden above the mineral deposit to be mined

1 in a series of rows or strips, and includes "auger mining"
2 when conducted in conjunction with surface mining;

3 (7) "Overburden" means the earth, rock, and other
4 materials which lie above a natural coal deposit;

5 (8) "Spoil" means any overburden material re-
6 moved from a surface coal mine which is either deposited
7 onto the surface coal mine area from which it is ex-
8 tracted or on land outside the boundaries of such mine;

9 (9) "Spoil bank" means the spoil deposited on the
10 surface so that the underlying coal may be recovered;

11 (10) "Stripping pit" means any trench, cut, hole,
12 or pit formed by removal of the surface or mineral as a
13 result of surface coal mining;

14 (11) "Reclamation" or "reclaim" means the re-
15 conditioning or restoration, when appropriate, of all or
16 part of the area of land affected by surface coal mining
17 operations and includes such contiguous lands as may
18 be necessary for an effective reclamation program;

19 (12) "Underground coal mining operations" means
20 those mining operations carried out beneath the surface
21 by means of shafts, tunnels, or other underground mine
22 openings;

23 (13) "Operator" means any owner, lessee, or other
24 person who operates, controls, or supervises a surface or
25 underground coal mine;

4

1 (14) "Agent" means any person charged by an
2 operator with responsibility for the operation of all or
3 part of a coal mine;

4 (15) "Person" means any individual, partnership,
5 association, corporation, firm, subsidiary of a corpora-
6 tion, or other organization;

7 (16) "Area of land affected" means that area of a
8 surface coal mine from which the overburden is removed,
9 except that in stripping pits not more than one hundred
10 feet in depth the area shall include the area occupied by
11 the spoil banks, and includes all lands affected by roads
12 constructed to gain access thereto and to haul coal; and

13 (17) "Operation" means all the premises, facilities,
14 roads, and equipment used in the process of extracting
15 minerals from a designated surface or underground coal
16 mine; and

17 (18) "State" includes a State of the United States,
18 the District of Columbia, the Commonwealth of Puerto
19 Rico, Virgin Islands, American Samoa, Guam, Trust
20 Territory of the Pacific Islands, and Indian tribes.

21 FINDINGS AND PURPOSE

22 SEC. 2. (a) The Congress finds and declares that an un-
23 regulated surface or underground coal mining operation—

24 (1) destroys or otherwise adversely affects entire
25 communities and private residences and businesses,

5

- 1 (2) menaces and adversely affects the public health
- 2 and safety,
- 3 (3) destroys natural beauty,
- 4 (4) damages or destroys the usefulness of the ter-
- 5 rain for other purposes and in the case of surface coal
- 6 mines leaves ugly highways that cannot be reclaimed,
- 7 (5) causes erosion of the soil,
- 8 (6) contributes to air and water pollution,
- 9 (7) adversely affects commercial and industrial
- 10 development,
- 11 (8) damages or destroys agricultural use of the
- 12 terrain,
- 13 (9) destroys forests, wildlife habitat, fishery re-
- 14 sources and spawning grounds, and other natural
- 15 resources,
- 16 (10) cannot in the case of surface coal mines, be
- 17 made subject to uniform conservation requirements be-
- 18 cause physical and chemical conditions of spoil and spoil-
- 19 bank characteristics differ from State to State, political
- 20 subdivision, bank to bank, and even from spot to spot on
- 21 a particular bank, and
- 22 (11) creates, because of the diversity of State regu-
- 23 lations, or the lack thereof, competitive disadvantages for
- 24 persons operating in a given market area and thereby
- 25 interferes with the orderly and fair marketing of minerals

6

1 in commerce, and that these results are detrimental to
2 the economy of the Nation.

3 (b) The Congress finds and declares that the public has
4 a right to enjoy a safe and healthy human environment and
5 to expect that the Federal Government, the States, and local
6 government will utilize all practicable means and measures
7 to protect and enhance the quality of our environment.

8 (c) It is, therefore, the purpose of this Act to provide
9 for participation by the Federal Government with State
10 and local governments, private individuals and other inter-
11 ested persons in a comprehensive program to prevent further
12 damage to the lands, waters, and natural resources of the
13 Nation from unregulated or inadequately regulated surface
14 and underground coal mining operations, to reclaim lands
15 and waters damaged by surface coal mining, and to promote
16 an effective continuing conservation land-use and manage-
17 ment program through—

18 (1) the establishment of criteria and standards for
19 the reclamation, conservation, and protection of aban-
20 doned or inactive surface coal mines;

21 (2) the termination of surface coal mine operations
22 in accordance with this title;

23 (3) the establishment of means and measures, in-
24 cluding, but not limited to, financial and technical assist-
25 ance and enforcement, to protect, foster, and promote

1 that right set forth in subsection (b) of this section in
2 order to create and maintain conditions under which
3 man and nature can exist in productive harmony, and
4 fulfill the requirements of present and future generations
5 of Americans;

6 (4) financial aid to provide for research and devel-
7 opment, and technical advisory assistance, and the in-
8 stallation of demonstration projects;

9 (5) cooperative programs with State and local
10 governments to provide, where appropriate, Federal
11 assistance for the reclamation and conservation of pub-
12 licly and privately owned surface and underground coal
13 mines;

14 (6) the promotion of the public health and safety
15 and public recreation, flood control, and soil erosion
16 control, air and water pollution control, forestry, agri-
17 culture, restoration and preservation of natural beauty,
18 enhancement of fish and wildlife habitat, and other nat-
19 ural resources values; and

20 (7) the elimination of competitive disadvantages for
21 persons operating in a given market area which interfere
22 with the orderly and fair marketing of coal in commerce.

23 COAL MINES SUBJECT TO ACT

24 SEC. 4. Each coal mine, the products of which enter
25 commerce, or the operations or products of which affect

1 commerce, and each operator of such mine, shall be subject
2 to the provisions of this Act.

3 SURFACE COAL MINES

4 SEC. 5. (a) On and after the enactment date of this
5 Act, no person shall open in any State any new, inactive, or
6 abandoned surface coal mine for the purpose of conducting
7 surface coal mining operations thereon.

8 (b) (1) On and after the enactment date of this Act,
9 any operator of a surface coal mine who is conducting oper-
10 ations therein to extract coal from such mine shall develop
11 and submit to the Administrator a plan for the effective
12 reclamation of such surface mine. Such plan shall be sub-
13 mitted by the operator within sixty days after such
14 enactment.

15 (2) The Administrator shall promulgate, within thirty
16 days after enactment of this Act, regulations governing the
17 content of any reclamation plan submitted to him under this
18 subsection. As a minimum, such regulations shall prescribe

19 (A) the prevention of all adverse offsite effects from such
20 mining and (B) effective requirements for the planned rec-
21 lamation of such mines and for the termination of all
22 surface coal mining operations at all surface coal mines with-
23 in six months after the date of enactment of this Act, except
24 those operations necessary to carry out any approved plan.

25 (3) The Administrator shall approve any plan sub-

mitted to him under this section if he determines that it meets the requirements of such regulations. The failure of any operator of a surface coal mine to submit to the Administrator an approvable reclamation plan under this section shall not relieve or be construed as relieving such operator of his obligation under this Act to carry out effective reclamation of such mine and to terminate surface coal mining operations at such mine within six months after the date of enactment of this Act. If an operator does not comply with the plan or submit it for approval, the Administrator may reclaim such lands and the operator shall be liable to the United States for all such costs of reclamation and the Administrator shall sue for the same in the appropriate district court which shall have jurisdiction.

NATIONAL STANDARDS FOR UNDERGROUND COAL MINES

SEC. 6. (a) The Administrator shall within ninety days after the date of enactment of this Act, publish proposed regulations prescribing national environmental control standards for underground coal mines opened on or before the enactment of this Act and for such mines opened or activated after the date of enactment of this Act and for contiguous areas affected by operations within such mines.

(b) After a reasonable time for interested persons to submit written comments thereon (but no later than ninety days after the publication of such proposed regulations), the

1 Administrator shall by regulation promulgate such regula-
2 tions with such modifications as he deems appropriate to
3 carry out the purpose of this Act. Such regulations may be
4 revised in the same manner as promulgated.

5 IMPLEMENTATION PLANS

6 SEC. 7. (a) (1) Each of the several States shall, after
7 reasonable notice and public hearings, adopt and submit to
8 the Administrator, within six months after the promulgation
9 of reasonable regulations under section 6(a) of this Act,
10 a plan which provides for the effective implementation, main-
11 tenance, and enforcement of such regulations within such
12 State.

13 (2) The Administrator shall, within four months after
14 the date required for submission of a plan under paragraph
15 (1) of this subsection, approve or disapprove such plan
16 or any portion thereof. The Administrator shall approve such
17 plan, or each portion thereof, if he determines that it was
18 adopted after reasonable notice and public hearing and that—

19 (A) it is in conformance with the regulations pro-
20 mulgated under section 6 of this Act;

21 (B) it includes provisions—

22 (i) for the issuance of permits or licenses by
23 the State for all underground coal mining operations
24 subject to such regulations and for the review and
25 renewal thereof at a minimum of every three years;

1 (ii) for the posting by the operator of each
2 underground coal mine of an adequate performance
3 bond to provide for the appropriate reclamation of
4 such mine simultaneously with such mining opera-
5 tions (whether or not such operator completes
6 mining operations at such mine), and the forfeiture
7 of which shall automatically result in the denial
8 of future permits or licenses applied for by such
9 operator or his successors in interest to conduct
10 operations at any other such mine in said State;

11 (iii) for mining operations to be planned and
12 approved prior to the issuance or renewal of any
13 license or permit;

14 (iv) for reports which shall be available to the
15 public by the operator of the mine concerning com-
16 pliance with his permit or license;

17 (v) for prohibiting the opening of any new
18 underground coal mine or expanding the operations
19 of any such existing mine where the State finds that
20 such mining would result in, or contribute to, the
21 violation of applicable air or water quality stand-
22 ards or where such mining would be detrimental to
23 the public health or welfare; and

24 (vi) for insuring that during operations at
25 such mine effective controls will be established and

1 maintained to prevent environmental damage con-
2 sistent with the purposes of this Act;

3 (C) it includes limitations, schedules, and time-
4 tables for compliance with such plan and such other
5 measures as may be necessary, including, but not limited
6 to, land use controls, to insure attainment and mainte-
7 nance of the regulations promulgated under section 6 of
8 this Act;

9 (D) it includes provision for establishment and
10 operation of appropriate devices, methods, systems, and
11 procedures necessary to (i) monitor, compile, and
12 analyze data on surface mining operations and reclama-
13 tion work, and (ii) upon request, make such data avail-
14 able to the Administrator and to the public;

15 (E) it provides necessary assurances that the State
16 will have adequate personnel, funding, and authority to
17 carry out such implementation plan;

18 (F) it provides for revision, after public hearings,
19 of such plan (i) from time to time as may be necessary
20 to take account of revisions of such regulations or the
21 availability of improved or more expeditious methods of
22 achieving such regulations; or (ii) whenever the Admin-
23 istrator finds on the basis of information available to him
24 that the plan is substantially inadequate to achieve such
25 regulations; and

1 (G) it includes such other provisions as the Admin-
2 istrator may require to carry out the purposes of this Act.

3 (b) (1) The Administrator shall, after consideration of
4 any State hearing record, promptly prepare and publish pro-
5 posed regulations setting forth an implementation plan, or
6 portion thereof, for a State if—

7 (A) the State fails to submit an implementation
8 plan within the time prescribed;

9 (B) the plan, or any portion thereof, submitted by
10 such State is determined by the Administrator not to
11 be in accordance with the requirements of this section,
12 or

13 (C) the State fails, within sixty days after notifi-
14 cation by the Administrator or such longer period as
15 he may prescribe, to revise an implementation plan as
16 required pursuant to a provision of its plan referred to
17 in subsection (a) (2) (F).

18 (2) If such State held no public hearing associated with
19 or respect to such plan (or revision thereof), the Admin-
20 istrator shall provide opportunity for such hearing within
21 such State on any proposed regulation. The Administrator
22 shall, within six months after the date required for submis-
23 sion of such plan (or revision thereof), promulgate and en-
24 force any such regulations unless, prior to such promulgation,
25 such State has adopted and submitted a plan (or revision)

1 which the Administrator determines to be in accordance with
2 the requirements of this section.

3 UNDERGROUND COAL MINES IN NATIONAL FORESTS AND
4 WILDERNESS AREAS

5 SEC. 8. (a) Underground coal mining operations on
6 lands within the national forest system shall be conducted
7 in a manner that will not damage or destroy any area within
8 the system or the natural resources of such area. Each op-
9 erator of any existing or planned underground coal mine
10 shall submit to the Secretary of Agriculture a plan for his
11 approval that will insure that no mining shall be allowed
12 on such area after one hundred and twenty days from the
13 enactment of this Act, until regulations are promulgated
14 which will assure that there will be no adverse effects, such
15 as subsidence, acid mine drainage, or any adverse onsite or
16 offsite effects from such mining. Such regulations shall also
17 provide for both a certification by the operator, at no less
18 than six-month intervals, that such regulations are being
19 followed, and the posting of a bond which will be sufficient
20 to cover the cost of all restoration work in the event the
21 regulations are not followed.

22 (b) No person shall hereafter be permitted to conduct
23 any underground coal mining operations in any area hereto-
24 fore or hereafter established as a wilderness area pursuant
25 to, or by, the Wilderness Act.

1 RECLAMATION AND CONSERVATION OF ABANDONED AND
2 INACTIVE SURFACE AND UNDERGROUND COAL MINED
3 LANDS OWNED BY STATE AND LOCAL GOVERNMENTS IN
4 THE UNITED STATES

5 SEC. 9. (a) It is the purpose of this section to facilitate,
6 where appropriate, the reclamation and conservation of lands
7 owned by State and local governments that have been ad-
8 versely affected by surface and underground coal mining
9 operations, and that have not been reclaimed prior to the
10 date of enactment of this Act to a level commensurate with
11 the criteria and standards to be established pursuant to this
12 Act by the Administrator, and by providing authority to
13 the Administrator to enter into agreements with the States
14 and local governments to provide financial and other assist-
15 ance for their reclamation and conservation. When the in-
16 tended use of the lands to be reclaimed is for parks, recre-
17 ation, or fish and wildlife purposes, the Administrator shall
18 enter into agreements respecting such lands only after con-
19 sultation with the Secretary of the Interior.

20 (b) (1) To carry out the purpose of this section, the
21 Administrator is authorized to enter into agreements with
22 the various State and local governments for the conservation
23 and reclamation of abandoned and inactive surface and under-
24 ground coal mined lands owned or hereafter acquired by
25 them, and for providing technical and financial assistance

1 thereto. Before entering into such agreements he shall satisfy
2 himself that such conservation and reclamation of a particular
3 area is feasible and consistent with the purpose of this section.

4 (2) Each such agreement shall describe (A) the actions
5 to be taken by the Administrator and by the State or local
6 government; (B) the estimated cost of these actions; (C)
7 the public benefits expected to be derived, including, but
8 not limited to, the benefits to the economy of the State or
9 local area, abatement or alleviation of land and water pollu-
10 tion, public recreation, fish and wildlife, and public health
11 and safety; (D) the share of the costs to be borne by the
12 Federal Government and by the State or local government;
13 except that, notwithstanding any other provision of law,
14 the Federal share of the cost shall not exceed the direct
15 identifiable benefits which the Administrator determines will
16 accrue to the public, and shall not in any event exceed 90
17 per centum of such cost and the share of the State or local
18 government shall not consist of funds granted under any other
19 Federal program; and (E) such other terms and conditions
20 as the Administrator deems desirable.

21 (3) The Administrator shall require as a part of any
22 agreement under this section that adequate provision be
23 made for access to, and use by, the public of lands reclaimed
24 under the provisions of this Act.

25 (4) Each agreement entered into under this section

1 shall contain a reasonable assurance by the State or local
2 government that the reclaimed lands which are devoted to
3 public use will be adequately maintained.

4 (5) Whenever the Administrator, after reasonable notice
5 and opportunity for hearing, determines that there is a failure
6 to expend funds in accordance with the terms and conditions
7 governing the agreement for approved projects, he shall
8 notify the State that further payments will not be made to
9 the State from appropriations under this Act until he is
10 satisfied that there will no longer be any such failure.

11 (6) The programs authorized to be assisted pursuant to
12 this Act shall be completed not later than January 1, 1980.

13 (c) The Administrator is authorized to pay not more
14 than 90 per centum of the actual cost of the acquisition of
15 surface or underground coal mined lands by a State or local
16 government to carry out the purpose of this section. In select-
17 ing such lands for such cost sharing, the Administrator shall

18 (1) require such feasibility studies as he deems appropriate,

19 (2) give preference to areas which have the greatest present
20 or potential value for public use for recreation, fish and wild-
21 life, and other public purposes, and (3) be satisfied that all
22 reasonable efforts have been made and exhausted to require
23 the operator of such lands to reclaim them pursuant to this
24 Act, or to donate such lands free to the State or local
25 government.

1 (d) The Administrator shall take legal remedies against
2 any operator of a coal mine for the costs of reclaiming such
3 lands (where such reclamation was required but not per-
4 formed under previously existing agreements) to the extent
5 of any Federal grant made for such reclamation. For the pur-
6 pose of this subsection, Congress finds and declares that such
7 lands impede commerce and adversely affect the public health
8 and welfare.

9 FEDERAL ENFORCEMENT

10 SEC. 10. (a) (1) Whenever, on the basis of any infor-
11 mation available to him, the Administrator finds that any
12 operator is in violation of any requirement of an applicable
13 implementation plan, the Administrator shall notify the oper-
14 ator in violation of the plan and the State in which the plan
15 applies of such finding and publish such finding. If such viola-
16 tion extends beyond the thirtieth day after the date of the
17 Administrator's notification, the Administrator shall issue
18 an order requiring such operator to comply with the re-
19 quirements of such plan or he shall bring a civil action in
20 accordance with subsection (b) of this section.

21 (2) Whenever, on the basis of information available to
22 him, the Administrator finds that violations of an applicable
23 implementation plan are so widespread that such violations
24 appear to result from a failure of the State in which the
25 plan applies to enforce the plan effectively, he shall so notify

1 the State. If the Administrator finds such failure extends
2 beyond the thirtieth day after such notice, he shall give
3 public notice of such finding. During the period beginning
4 with such public notice and ending when such State satisfies
5 the Administrator that it will enforce such plan (hereafter
6 referred to in this section as "period of federally assumed en-
7 forcement"), the Administrator may enforce any requirement
8 of such plan with respect to any person—

9 (A) by issuing an order to comply with such re-
10 quirement, or

11 (B) by bringing a civil action under subsection
12 (b) of this section.

13 (3) Whenever, on the basis of any information available
14 to him, the Administrator finds that any operator is in viola-
15 tion of section 5 or 8 of this Act, he shall issue an order
16 requiring such person to comply with such section or require-
17 ment, or he shall bring a civil action in accordance with sub-
18 section (b) of this section, requiring such operator to comply
19 with such sections.

20 (4) An order issued under this section shall take effect
21 immediately. A copy of any order issued under this section
22 shall be sent to the State in which the violation occurs. Any
23 order issued under this section shall state with reasonable
24 specificity the nature of the violation, specify a time for com-
25 pliance which the Administrator determines is reasonable,

1 taking into account the seriousness of the violation and any
2 good faith efforts to comply with applicable requirements. In
3 any case in which an order or notice under this section is
4 issued to a corporation, a copy of such order shall be issued
5 to appropriate corporate officers.

6 (5) All notices or orders issued or the termination
7 thereof under this section shall be published in the Federal
8 Register.

9 (b) The Administrator may commence a civil action for
10 appropriate relief, including a permanent or temporary in-
11 junction, whenever any operator—

12 (1) violates or fails or refuses to comply with any
13 order issued under subsection (a) of this section; or

14 (2) violates any requirement of an applicable im-
15 plementation plan during any period of federally assumed
16 enforcement more than thirty days after having been
17 notified by the Administrator under subsection (a) (1)
18 of this section of a finding that such person is violating
19 such requirement; or

20 (3) violates section 5 or 8 of this Act; or

21 (4) fails or refuses to comply with any requirement
22 of this Act or any regulation issued hereunder.

23 Any action under this section may be brought in the district
24 court of the United States for the district in which the
25 defendant is located or resides or is doing business, and

1 such court shall have jurisdiction to restrain such violation
2 and to require compliance. Notice of the commencement
3 of such action shall be given to the appropriate State.

4 (c) (1) Any operator or agent of an operator who
5 knowingly (A) violates any requirement of an applicable
6 implementation plan during any period of federally assumed
7 enforcement more than thirty days after having been notified
8 by the Administrator under subsection (a) (1) of this section
9 that such person is violating such requirement, or (B) vio-
10 lates or fails or refuses to comply with any order issued by
11 the Administrator under subsection (a) of this section, or
12 (C) violates section 5 or 8 of this Act, shall be punished
13 by a fine of not more than \$25,000 per day of violation,
14 or by imprisonment for not more than one year, or by both.
15 If the conviction is for a violation committed after the first
16 conviction of such person under this paragraph, punishment
17 shall be by a fine of not more than \$50,000 per day of viola-
18 tion, or by imprisonment for not more than two years, or
19 by both. One-half of said fine shall be paid to any person
20 giving information which shall lead to a conviction and he
21 may sue for the same.

22 (2) Any person who knowingly makes any false state-
23 ment, representation, or certification in any application, rec-
24 ord, report, plan, or other document filed or required to be
25 maintained under this Act or who falsifies, tampers with, or

1 knowingly renders inaccurate any monitoring device or
2 method required to be maintained under this Act, shall, upon
3 conviction, be punished by a fine of not more than \$10,000,
4 or by imprisonment for not more than six months, or by
5 both.

6 (d) (1) The operator of a surface mine who violates
7 section 5 or 8 of this Act or any implementation plan or
8 portion thereof or fails or refuses to comply with any order
9 issued under this section shall be assessed a civil penalty by
10 the Administrator which penalty shall not exceed \$10,000
11 for each such violation. If any violation is a continuing one,
12 each day of such violation shall constitute a separate viola-
13 tion for the purpose of computing the applicable civil pen-
14 alty. The Administrator shall have the power to compromise,
15 mitigate, or remit such penalties.

16 (2) Whenever the Administrator has reason to believe
17 that a person has become subject to the imposition of a civil
18 penalty under the provisions of this subsection, he shall
19 notify such person in writing (A) setting forth the date,
20 facts, and nature of each act or omission with which the
21 person is charged, (B) specifically identifying the par-
22 ticular provision or provisions of the section, rule, regulation,
23 order, or plan involved in the violation, and (C) advising
24 of each penalty which the Administrator proposes to im-
25 pose and its amount. Such written notice shall be sent by

1 registered or certified mail by the Administrator to the last
2 known address of such person. The person so notified shall be
3 granted an opportunity to show in writing, within such rea-
4 sonable period as the Administrator shall by regulation pre-
5 scribe, why such penalty should not be imposed. The notice
6 shall also advise such person that upon failure to pay the
7 civil penalty subsequently determined by the Administrator,
8 if any, the penalty may be collected by civil action.

9 (3) On the request of the Administrator, the Attorney
10 General is authorized to institute a civil action to collect
11 a penalty imposed pursuant to this section. The Attorney
12 General shall have the exclusive power to compromise, miti-
13 gate, or remit such civil penalties as are referred to him for
14 collection.

15 INSPECTIONS, MONITORING, AND ENTRY

16 SEC. 11. (a) For the purpose (i) of developing or
17 assisting in the development of any implementation plan, or
18 any regulation, or (ii) of determining whether any person
19 is in violation of any requirement of such a plan or any other
20 provision of this Act—

21 (1) the Administrator may require the operator
22 of any coal mine to (A) establish and maintain such
23 records, (B) make such reports, (C) install, use, and
24 maintain such monitoring equipment or methods, (D)
25 sample such emissions (in accordance with such meth-

1 ods, at such locations, at such intervals, and in such man-
2 ner as the Administrator shall prescribe), and (E)
3 provide such other information as he may reasonably
4 require; and

5 (2) the Administrator or his authorized representa-
6 tive, upon presentation of his credentials—

7 (A) shall have a right of entry to, upon, or
8 through any coal mine or any premises in which any
9 records required to be maintained under paragraph
10 (1) of this subsection are located, and

11 (B) may at reasonable times have access to
12 and copy any records, inspect any monitoring equip-
13 ment or method required under paragraph (1).

14 (b) Any records, reports, or information obtained under
15 subsection (a) shall be available to the public, except that
16 upon a showing satisfactory to the Administrator by any
17 person that records, reports, or information, or particular
18 part thereof, to which the Administrator has access under
19 this section if made public, would divulge methods or proc-
20 esses entitled to protection as trade secrets of such person,
21 the Administrator shall consider such record, report, or
22 information or particular portion thereof confidential, except
23 that such record, report, or information may be disclosed to
24 other officers, employees, or authorized representatives of the

1 United States concerned with carrying out this Act or when
2 relevant in any proceeding under this Act.

3 CITIZEN SUITS

4 SEC. 12. (a) Except as provided in subsection (b) of
5 this section, any person may commence a civil action on his
6 own behalf—

7 (1) against any person (including (i) the United
8 States, and (ii) any other governmental instrumentality
9 or agency to the extent permitted by the eleventh
10 amendment to the Constitution) who is alleged to be
11 in violation of (A) any implementation plan or section
12 5 or 8 of this Act or (B) an order issued by the Admin-
13 istrator or a State with respect to such plan or sections,
14 or

15 (2) against the Administrator where there is
16 alleged a failure of the Administrator to perform any act
17 or duty under this Act which is not discretionary with
18 the Administrator.

19 (b) The district courts shall have jurisdiction, without
20 regard to the amount in controversy or the citizenship of the
21 parties, to enforce such plan or section, or such order, or to
22 require the Administrator to perform such act or duty, as the
23 case may be.

24 (c) Nothing in this section shall restrict any right

1 which any person (or class of persons) may have under any
2 statute or the common law to seek enforcement of this title
3 or to seek any other relief, including relief against the
4 Administrator or any State agency.

5 APPEARANCE

6 SEC. 13. The Administrator shall request the Attorney
7 General to appear and represent him in any civil action
8 instituted under this Act to which the Administrator is a
9 party. Unless the Attorney General notifies the Adminis-
10 trator that he will appear in such action, within a reasonable
11 time attorneys appointed by the Administrator shall appear
12 and represent him.

13 FEDERAL PROCUREMENT

14 SEC. 14. (a) No Federal agency may enter into any
15 contract with any operator who is convicted of any offense
16 under this Act for the procurement of goods, materials, and
17 services to perform such contract at any coal mine at which
18 the violation which gave rise to such conviction occurred. The
19 prohibition in the preceding sentence shall continue until the
20 Administrator certifies that the condition giving rise to such
21 a conviction has been corrected.

22 (b) The Administrator shall establish procedures to pro-
23 vide all Federal agencies with the notification necessary for
24 the purpose of subsection (a).

25 (c) In order to implement the purposes and policy of

1 this Act, the President shall, not more than one hundred and
2 eighty days after enactment of this Act, cause to be issued an
3 order (1) requiring each Federal agency authorized to enter
4 into contracts and each Federal agency which is empowered
5 to extend Federal assistance by way of grant, loan, or con-
6 tract to effectuate the purpose and policy of the Act in such
7 contracting or assistance activities, and (2) setting forth pro-
8 cedures, sanctions, penalties, and such other provisions, as the
9 President determines necessary to carry out such requirement.

10 (d) The President may exempt any contract, loan, or
11 grant from all or part of the provisions of this section where
12 he determines such exemption is necessary in the paramount
13 interest of the United States and he shall notify the Congress
14 of such exemption.

15 (e) The President shall annually report to the Congress
16 on measures taken toward implementing the purpose and in-
17 tent of this section, including but not limited to the progress
18 and problems associated with implementation of this section.

19 GENERAL PROVISION RELATING TO ADMINISTRATIVE PRO-
20 CEEDINGS AND JUDICIAL REVIEW

21 SEC. 15. (a) For the purposes of obtaining information,
22 the Administrator may issue subpoenas for the attendance and
23 testimony of witnesses and the production of relevant papers,
24 books, and documents, and he may administer oaths. Upon
25 a showing satisfactory to the Administrator by such owner

1 or operator that such papers, books, documents, or informa-
2 tion or particular part thereof, if made public, would divulge
3 trade secrets or secret processes of such owner or operator,
4 the Administrator shall consider such record, report, or in-
5 formation or particular portion thereof confidential, except
6 that such paper, book, document, or information may be
7 disclosed to other officers, employees or authorized repre-
8 sentatives of the United States concerned with carrying out
9 this title, or when relevant in any proceeding under this Act.

10 Witnesses summoned shall be paid the same fees and mileage
11 that are paid witnesses in the courts of the United States. In
12 case of contumacy or refusal to obey a subpoena served upon
13 any person, the district court of the United States for any
14 district in which such person is found or resides or transacts
15 business, upon application by the United States and after
16 notice to such person, shall have jurisdiction to issue an
17 order requiring such person to appear and give testimony
18 before the Administrator to appear and produce papers,
19 books, and documents before the Administrator, or both, and
20 any failure to obey such order of the court may be punished
21 by such court as a contempt thereof.

22 (b) (1) A petition for review of action of the Adminis-
23 trator in promulgating any regulation under this Act may
24 be filed only in the United States Court of Appeals for the
25 District of Columbia. A petition for review of the Adminis-

1 trator's action in approving or promulgating any reclamation
2 plan or any implementation plan may be filed only in the
3 United States Court of Appeals for the appropriate circuit.
4 Any such petition shall be filed within thirty days from the
5 date of such promulgation or approval, or after such date
6 if such petition is based solely on grounds arising after such
7 thirtieth day.

8 (2) Action of the Administrator with respect to which
9 review could have been obtained under paragraph (1) shall
10 not be subject to judicial review in civil or criminal proceed-
11 ings for enforcement.

12 (c) In any judicial proceeding in which review is sought
13 of a determination under this Act required to be made on the
14 record after notice and opportunity for hearing, if any party
15 applies to the court for leave to adduce additional evidence,
16 and shows to the satisfaction of the court that such additional
17 evidence is material and that there were reasonable grounds
18 for the failure to adduce such evidence in the proceeding be-
19 fore the Administrator, the court may order such additional
20 evidence (and evidence in rebuttal thereof) to be taken be-
21 fore the Administrator, in such manner and upon such terms
22 and conditions as to the court may deem proper. The Admin-
23 istrator may modify his findings as to the facts, or make new
24 findings, by reason of the additional evidence so taken and he
25 shall file such modified or new findings, and his recommenda-

1 tion, if any, for the modification or setting aside of his original
2 determination with the return of such additional evidence.

3 EMPLOYEE PROTECTION

4 SEC. 16. (a) No person shall discharge or in any other
5 way discriminate against or cause to be discharged or dis-
6 criminated against any employee of a surface mine or any
7 authorized representative thereof by reason of the fact that
8 such employee or representative (1) has notified the Admin-
9 istrator or his authorized representative of any alleged viola-
10 tion or danger, (2) has filed, instituted, or caused to be filed
11 or instituted any proceeding under this Act, or (3) has testi-
12 fied or is about to testify in any proceeding resulting from the
13 administration or enforcement of the provisions of this Act.

14 (b) Any such employee or representative who believes
15 that he has been discharged or otherwise discriminated
16 against by any person in violation of subsection (a) of
17 this section may, within thirty days after such violation
18 occurs, apply to the Secretary of Labor for a review of such
19 alleged discharge or discrimination. A copy of the applica-
20 tion shall be sent to such person who shall be the respondent.
21 Upon receipt of such application, the Secretary of Labor
22 shall cause such investigation to be made as he deems appro-
23 priate. Such investigation shall provide an opportunity for
24 a public hearing at the request of any party to enable
25 the parties to present information relating to such violation.

1 The parties shall be given written notice of the time and
2 place of the hearing at least five days prior to the hearing.
3 Any such hearing shall be of record and shall be subject to
4 section 554 of title 5 of the United States Code. Upon
5 receiving the report of such investigation, the Secretary
6 shall make findings of fact. If he finds that such violation
7 did occur, he shall issue a decision, incorporating an order
8 therein, requiring the person committing such violation to
9 take such affirmative action to abate the violation as the
10 Secretary of Labor deems appropriate, including, but not
11 limited to, the rehiring or reinstatement of the employee or
12 representative to his former position with back pay. If he
13 finds that there was no such violation, he shall issue an
14 order denying the application. Such order shall incorporate
15 the Secretary's findings therein. Any order issued by the
16 Secretary under this paragraph shall be subject to judicial
17 review in accordance with section 11 of this Act. Violations
18 by any person of subsection (a) of this section shall be
19 subject to the provisions of section 11 of this Act.

20 (c) Whenever an order is issued under this section,
21 at the request of the applicant, a sum equal to the aggregate
22 amount of all costs and expenses (including the attorney's
23 fees) as determined by the Secretary of Labor to have been
24 reasonably incurred by the applicant for, or in connection
25 with, the institution and prosecution of such proceedings,
26 shall be assessed against the person committing such violation.

STATEMENT OF ELLEN LOUISE PFISTER, JACKSON, MISS.

Gentlemen, this testimony should be taken in conjunction with the testimony submitted by Mrs. Vera-Beth Johnson, Roundup, Montana, and Mrs. Ann Charter, Billings, Montana. This testimony is submitted in support of the bill submitted by Hon. Kenneth Heckler, Representative from West Virginia which would ban strip mining in the United States within a six month period after its passage. I submit the following in order to acquaint you with an area which is threatened with strip mining and which I believe will be irreparably damaged by a radical method of mining thus destroying God's earth and our children's heritage. At this point in time, all the cards are stacked against the preservation of the Bull Mountains. We are not asking for a ban on all coal mining, but merely a ban on all strip mining.

Consolidation Coal Company is at this time doing the preliminary work necessary to open a strip mining operation in the Bull Mountain area of Yellowstone and Musselshell Counties, Montana. Consolidation Coal, hereinafter referred to as Consol, has come into the area under leases granted by the Burlington Northern Railroad, a corporate successor to the Northern Pacific Railroad. The Consol leases cover land to which the surface and mineral title are both vested in the Burlington Northern Railroad, hereinafter referred to as the "BN", and lands to which the BN's corporate predecessors had conveyed title to third parties, but reserved the coal and other minerals, of which iron is the only mineral other than coal granted under the Federal land grants. The Northern Pacific Railroad was granted every other section on each side of the railroad in some cases as far away as thirty miles under acts of Congress. The consideration for these grants was the railroad's aid in the construction of a railroad and telegraph line to the Pacific Coast and to secure the safe and speedy transport of the mails, troops, munitions of war, and "public stores." It is evident now, that at least part of the consideration for the grant has now failed. In the Bull Mountain area, in addition to coal being owned by the BN, the other large coal owner is the U.S. Government. The general scheme of ownership is that the U.S. Government reserved the coal on the even-numbered sections, except where they are conveyed to the State of Montana for school sections.

Consol has been prowling around the Bull Mountains for over a year and a half now, has submitted a test pit plan, which has been approved by the State of Montana on July 26, 1971, and can write the letter which I attach hereto as "Exhibit 'A'." It is interesting to note that this letter was referred to the Environmental Quality Control Department of Consol located in Pennsylvania rather than to the North Dakota office, which has Mr. Larry Fuller, "Regional Engineer," who is the Consol man apparently responsible of the creation of the mining and reclamation plan which has been approved by the State of Montana for the initial "test" pit. Under the present State of Montana reclamation law, it is unclear whether this initial pit in the Bull Mountains is a test pit for the coal company to test how well the coal in the area burns in large quantities, or if additionally, it is a test pit for the results of the reclamation plan as well. If the pit is also a reclamation test, then due to the slow growing qualities of the area when growth is not artificially irrigated, then logically a moratorium for a period of several years should follow this initial pit in order to determine how successful the reclamation plan is, and that success can only be tested over a period of years in our country.

Neither the State of Montana, the BN, nor the coal company have shown any disposition to declare such a moratorium. I have written to Mr. Louis Menk, President of the Burlington-Northern Railroad, the coal lessor, suggesting the idea of a moratorium in order to determine reclamation success and suggesting that he offer his ranch in the area for a test area by creating artificial spoil banks thereon in order to show the railroad's good faith that it will not cause to be torn up something that cannot be repaired; however, he does not reply. It must be that he does not wish to gore his own ox in order to persuade me that it will not hurt when his corporation gores my ox. Mr. Menk should take notice of the size of the Bull Mountain coal field and wonder under existing circumstances when the U.S. Government may see fit to gore his ox by granting coal leases on federal coal.

In order to introduce the Bull Mountain country of Musselshell and Yellowstone Counties, Montana. I would like to quote from Bulletin No. 647 of the U.S. Geological Survey entitled *The Bull Mountain Coal Field in Musselshell*

and Yellowstone Counties, Montana, by L. H. Woolsey et al, published in 1917. The following is taken from page 17, to-wit:

"The entire Bull Mountain country is first-class grazing land, timber and "rimrock" forming excellent shelter for stock. The high level areas are as a rule, only fringed with trees and support a luxuriant growth of "bunch" grass. The lowlands support a growth of "buffalo" grass, sagebrush, and cactus."

Something omitted from the report is the mention of the beauty of the Bull Mountains. As a native Westerner, the East has something of the beauty of a very pretty young girl whose beauty lies in her pretty pink flesh, but withers and fades as she ages. The Bull Mountains have the beauty of a woman with a fine bone structure and no superfluous flesh to sag and wither with age. My father was born in Wyoming before it was admitted to the Union, and he had run cattle in most areas of the Rocky Mountain West. He thought that the Bull Mountains was among the best cattle areas that he knew. The grass is excellent; in twenty-nine years we have never had a blizzard of the classic Wyoming and Eastern Montana variety, the winter and summer shelter is good, and the water is good to drink and adequate for stock-watering purposes. Not only is it good cattle country, it is good wildlife country as well. We have had lessees who did not feed their cattle in the winter, and the cattle were not walking skeletons in the spring. There is a variety of herbage available through the snow in the winter.

In addition to good grasses, there is quite a large number of shrubs, bushes and little brouse plants. The trees, mostly pine and cedar provide shade on a hot summer's day for cattle and wildlife, and along with the ridges and rimrocks provide excellent windbreak in the winter. The last time any ground was plowed and planted for dryland crops was in 1940 or 1941. The first grass that seeded in was a grass called "cheat" grass, which is an annual grass usually eaten by cattle only in the spring when it is green. Cheat grass seems to have little or no nutritive qualities other than bulk after it "cures". It has been only within the last five years that any of the better native grasses have seeded into the formerly plowed areas on our ranch. I believe that the reason this reseeding is taking place is due to the construction of a small water spreading system that was constructed in the area and the non-use of that area for winter feeding and spring pasture. This year was extremely dry during the growing season, however, and it looks as though the better native grasses lost ground rather than gained. Whenever a bulldozer blade is so much as scraped 3 inches into the surface of this country, a visible scar is left for a period of at least 5 to 20 years. There may be vegetative covering of weeds which will come in, but weeds are a poor substitute for a good native grass crop. This land recovers its ecological balance far more slowly than does the land of the wetter East.

According to the above-mentioned Geological Bulletin, there are three basic geological formations in the Bull Mountain area. The lowest formation is called the Bearpaw shale, and according to the report, it outcrops in the following townships and ranges over toward the Musselshell River, to-wit: Township 8 North, Range 24 East; Township 9 North, Range 28 East, Ranges 29, 30, and 31 East. This shale also outcrops in the irrigated district South toward the Yellowstone River in the area of Shepherd, Montana which lies about 13 miles North and East of Billings, Montana. The Bearpaw shale is a marine deposition of dark clays and adobes ranging in color from gray to black. The Bearpaw shale is usually considered to very low quality water and very little of that. In the Shepherd area, the only water is obtained from shallow wells in gravelly areas which have been deposited on the top of the bearpaw shale. Those in the Shepherd area not fortunate enough to have a shallow well haul their water for use.

The Lance formation overlies the Bearpaw shale and dips in a Southerly direction; colors of yellowish gray sands, drab yellow, and gray clays, clay shale, and grayish sand shale predominate. The upper portion of the Lance formation contains a thin bed of coal. The thickness of the Lance formation varies from 1,420 feet in depth Northwest of Musselshell, Montana, to 700 to 800 feet thick Northeast of Musselshell, Montana. The Lance formation also outcrops in the tier of Townships 4 North on the South side of the Yellowstone-Musselshell River divide. The Lance formation provides only small amounts of water not of the best quality.

The Fort Union formation overlies the Lance formation, and is divided by name into two portions. The lower one is called the Lebo shale member and is 200 to 300 feet thick with rocks of olive-green, yellow, brown, and dark sand clay, sandy shale, and soft sandstone. It has two coal bearing areas, the most noticeable and important one being the Big Dirty seam, which is a very sandy seam of

coal and ranges from two to twenty-four feet in thickness. The upper portion of the Fort Union formation is also known as the Tongue River member; however, it was given that designation at a later date than the 1917 U.S. Geological Survey Report.

The Fort Union formation as it exists in the Bull Mountains is approximately 1,600 feet thick. The geologists suppose that a 30 foot coal seam was burned off the top of it, because there are many rocks found in the area that are melded in such a manner as only fire can do. The upper Fort Union formation contains 26 "major" coal beds. According to the 1917 geologists, the coal field in the Fort Union formation in the Bull Mountain area stretches from the Musselshell River on the North through Township 5 North, Montana Prime Meridian, on the South and from "Dean Creek" on the West through Range 31 East, Montana Prime Meridian, on the East, being an area approximately 50 miles East and West and 30 miles North and South. The Upper Fort Union formation consists of sandstone beds varying in thickness from a fraction of a foot to 50 feet or more, and these are interlarded with clayshale, shale and the various beds of coal. See attached drilling logs, attached hereto as Exhibits B, C, D, and E. The names of the 26 coal beds are set forth in the above-mentioned U.S. Geological Bulletin No. 647.

It has been extremely difficult to determine from talking to coal company representatives just which bed of coal Consol is planning to remove. The first representatives who came to see us were William (Jerry) Kennedy and Pat Wardlaw, and they talked about mining for the Mammoth seam of coal, also known as the Mammoth-Rehder seam. This seam outcrops mostly in the higher elevations, and on the maps which I have seen in the possession of Consol men, the outcrop of that seam is in the South tier of sections of Township 6 North, Range 27 East and dipping down into the North tier of Sections in Township 5 North, Range 27 East and on the North side of the divide, it snakes around quite a bit around some high northerly extending ridges in the area. I believe the Mammoth seam to be the vein for which Consol core-drilled last summer on our ranch; however, in my conversations with employees of Consolidation Coal this summer (1971) Consol was supposed to be prospecting on the Roundup seam. Kennedy and Wardlaw talked to Mother and I in the summer of 1970.

According to the U.S. Geological survey, there are ten smaller seams of coal over the Mammoth-Rehder seam and 21 veins of coal over the Roundup seam. Mining for the Roundup seam would cause even more disturbance than mining for the Mammoth-Rehder.

In 1909, when the Roundup miners were living in caves in the rocks around Klien, Montana, the mines had tunnelled to a depth of 347 feet to get at the Roundup seam to work a vein of coal that in that area was only five feet thick. In an area which I believe to be Section 27, Township 6 North, Range 27, East, in July 1970, Consol core-drilling crews brought up a core of coal 16.9 feet in thickness with few if any partings from a depth of approximately 116 feet. They struck water within 17 feet of the surface. It is probable that any future strip mining in that draw would dry up the perpetual spring that we have developed at an elevation higher up the draw. The spring is called the "Mountain Spring" and is never dried by drought, and the water is good and sweet. The seam which Consol was prospecting by core sampling and by information obtained in other manners ran as far south as Section 9, Township 5 North, Range 27 East, having a thickness of 9+ feet in that section's South Half.

Landowners talking to Consol men cannot get a straight answer in trying to find out how much of the Bull Mountains will be mined and where. Larry Fuller, Regional Engineer, has said "2%", but when asked which 2%, gave no answer other than 2%. It is strongly suspected that the valleys will be mined and on as far into the hills as their machines can profitably remove over-burden. The Consol men have told my Mother, myself and other landowners that Consol may be mining in the Bull Mountains for 100 years. See the Billings Gazette, Morning Edition, March 11, 1971, p. 13. If Consol is allowed to stay for 100 years, technology may be developed to enable stripping down to the Roundup seam, or even the entire Fort Union Tongue River formation. In which case, the entire area would be even more deeply disturbed than is now contemplated and possible with the present technology. The present strip mining technology is now sufficiently advanced to make it possible to render the entire Bull Mountain area unfit for human habitation and animal habitation as well, except possibly goats.

Consol men have told me that Consol contemplates beginning mining operations at about an altitude of 3800 feet. According to the maps in the above-mentioned U.S. Geological Survey Bulletin No. 647, on pages 109 and 123, the

contour line for 3800 feet elevation extends much further South than any of Consol's core hole prospectors or the projected outcrop of the Mammoth-Rehder seam. The 3800 foot elevation also extends further South than Consols' lease from the BN, the extent and coverage of which, I have only the word of employees of Consolidation Coal Company, because Consol has not recorded a memorandum of lease which would give notice to any party that the coal retained by the Northern Pacific Railroad has been leased by the BN to Consol.

From what I have been able to learn, the Tongue River portion of the Fort Union formation is the only good aquifer in the Bull Mountain area. I have talked to a man in the Agriculture and Soil Conservation Department who is familiar with the area, and it is his opinion that if the Fort Union formation is seriously disturbed by blasting, that the next region of relatively abundant water is down through the Bearpaw shale, and is thermal in nature. A report by the Montana Bureau of Mines and Geology, Information Circular 15, *Preliminary Report on the Geology and Ground-Water Resources of Parts of Musselshell and Golden Valley Counties, Montana*, contains the following quotation concerning the upper Fort Union formation:

"... one of the best aquifers in the area. Yield of individual wells may be small but moderate to large yields can be obtained if an adequate section of water bearing beds is penetrated. Coal beds yield considerable water in the vicinity of Roundup."

The general idea of the water geology seems to be that the water bearing beds slope North toward Roundup, which induces some flow in that direction. The 1917 U.S. Geological Survey Bulletin No. 647 notes numerous springs on the North side of "Eldridge Mesa," or Dunn Mountain, as it is sometimes called. The operation of the underground mines at Roundup entailed a heavy pumping of water. During the 1950's most of the springs on the North side of Dunn Mountain were dry. When the mines in Roundup mostly ceased operation, the springs on the North side of the Mountain on the Charter place opened up again.

The 1917 report also notes that there is little natural water on the South side of Dunn Mountain. This is true. We have only one or two natural springs on our entire ranch. We have drilled wells ranging from 58 feet to 350 feet in depth. There is one dug well on the South end of our place which was mentioned in the 1929 report on water in Yellowstone County, being U.S. Geological Survey Water Supply Paper No. 599 as being 26 feet in depth. The Water Supply paper gave the reason for such a shallow well being the accumulation of gravel in that draw. Ordinarily on our place if you find a draw with a good bit of washed gravel in it and a cottonwood tree or two, water is relatively shallow there. In the 1917 Coal report the geologists assumed that there was a relatively stable water table, in other words, elevation combined with depth equalled water. The water supply paper of 1929 reflected increased experience which had shown that it was not necessarily so. Morris Welshland, a geologist, has told me that the water table in our area is a perched table, in other words, the water bearing rocks are only in certain areas and may thin out entirely at the same elevation and depth. At that point one may have to drill deeper to find water bearing strata. We have in the course of 29 years drilled a good many wells, most of which are adequate for stock watering purposes, but probably not for much heavier use, such as for irrigation or slurry lines. We have found that our well at our home is adequate for household purposes and some very mild garden watering, but we cannot keep a green lawn in the summer, too, and our gardening is done with mulches of hay and rocks to conserve moisture. Nor do we have a washing machine. When the house well was drilled, it was supposed to pump 4 gallons a minute, but we cannot judge its present capacity.

Montana seems to have loads of experiment stations, but most of the experiments have been with plants grown under cultivation and irrigation. The Northern Pacific has been operating a strip mine at Colstrip, Montana, for at least 30 years now. I was down there in June and saw old spoilbank after old spoilbank that had a natural growth covering on it comparable only to desert areas. As a matter of fact, the outback around Alice Springs, Australia, has a better vegetative covering. Yet essentially the Alice Springs area is a grazing area far inferior to Eastern Montana and the Bull Mountains. Research on the reclamation of the Colstrip spoil banks began only three years ago in 1968. It is being conducted by Mr. Richard Hodder of Montana State University with funds supplied by the Western Energy Company, a strip mine lessee of the Burlington Northern Railroad; his latest 1970 Progress Report is full of methods that have been essentially unsuccessful or that demonstrate that the state of the art of

reclamation of dry land Eastern Montana is still in such an infantile stage of development that all strip mining should be banned in the State until successful methods of reclamation can be developed from the amply adequate piles of spoil banks on view at Colstrip, Montana. They have got all the spoilbanks in the world that anyone could wish to experiment upon at Colstrip without starting them up at Savage, Decker, Bull Mountains, Sarpy Creek and other areas. Mr. Hodder has been limited in his effectiveness by the lack of seed available from native plants. There is a limited operation in effect at Bridger, Montana, which grows native plants by seed, but it will be far, far from adequate if strip mining opens up in a big way, and the coal companies make a half-hearted attempt to comply with the State's two seeding contract.

A perusal of Mr. Hodder's study shows that his areas of knowledge of suitable reclamation procedures for Eastern Montana are far more limited than the extent of his areas of ignorance or "I don't know's." He calls for further detailed studies in such areas as mining effect on the water table. He also used a grass called Fairway Crested Wheat Grass. This grass had a vogue back in the late 1930's and early 1940's. It was supposed to be a wonder grass. It does make a pretty growth in the spring, but cattle, if given a preference with other grasses available, will eat it only in the spring when it is green. When it cures, cattle will select other grasses in preference. Now thirty years later there are articles appearing in farm magazines on what to do when Fairway Crested Wheat Grass hits a 30 year slump and production falls off. The answer is to fertilize it with chemical fertilizer. The advantage of the native grasses is that given ordinary grazing production does not fall off. Up until now, the rancher using the range pretty much as God planted it, has been relatively free from the need to buy from the chemical fertilizer salesman, but it appears that with the advent of strip mining, mass plantings of non-native plants, and extreme disruption of the earth's layers, that the rancher may be forced to go to the fertilizer pusher. Mr. Hodder in his study advocates the use of chemical fertilizers to get grass started on spoil banks, but he has not yet had the time to determine what happens to the grass stimulated with fertilizers the first year and left alone the 2nd, 3rd, 4th, and 5th years. It seems to me that it might be like getting a person high on drugs, that the crash is the worst part with the user worse off than before.

An outfit called Reforestation, Inc. has been purveying portions of the Bull Mountains through inter-state advertising and through the mails. According to one John Ligget, a real estate man in Roundup, Montana who puts one in touch with the local Reforestation representative, most of the Reforestation sales have been to the "lunch bucket crowd" back East who want a place to come park their camper in the summer or build a retirement home when the time comes. Some of this land is odd-numbered sections with coal reservations by the BN and some of it is even-numbered sections with coal reservations by the U.S. Government. The material which Reforestation sends out when it solicits sales does not any where directly state that there is a possibility of strip mining in the Bull Mountain area. The Consol lease is not of record. There is no way that these innocent purchasers can check whether the coal on this land has been leased, and when a letter was addressed to Reforestation concerning this matter, Reforestation evaded the issue and misinterpreted the Montana Surface Mine Reclamation Act by stating that the land had to be put back in its original condition, which is *not* the case under the Montana law. A copy of the letter which was sent inquiring about the minerals is attached as Exhibit F and the copy of the response is attached as Exhibit G. These Eastern lunch bucket people are buying this land because they think it has recreation value, but mining in the area will utterly destroy it for this kind of use. Some of the land being sold is not more than three miles from the test pit being opened by Consol. I do not think that under the circumstances of strip mining that the lands sold by Reforestation, Inc., should be approved for sale in interstate commerce by the Department of Interstate Land Sales.

The Northern Pacific deeds call for damages to be paid to the surface owner for the destruction of the surface at the fair market value. Reforestation, Inc. is selling land at a price up to \$283.00 per acre to my personal knowledge. Yet all the money in the world is not a sufficient compensation to have to look at a spoil bank for the rest of one's life, even if the spoil bank is planted with grass. It is still a spoil bank, and if one goes over the top, one will see just another spoil bank on the other side, and another and another. If the Bull Mountains are strip mined another piece of beauty will have vanished from the earth, and

I have heard tell that we are short on beauty now. Any recreational uses to which the Bull Mountains could be put will be destroyed. After all, who wants to trailride in a spoil bank.

Strip mining will drive out the antelope and the wild turkey, who are both skittish creatures. Strip mining will drive out the people who have survived and endured through the railroad's speculation, through the United States Government's speculation, and through depression and inflation. The railroad will profit through coal royalties and through hauling freight of coal East on its rails. It will profit from land which was given to it and which it has never loved save for money. The Bull Mountains are a dollar sign to the railroad and life to their residents. Live better electrically is being promoted in Chicago, Mississippi and Montana. Air-conditioning is being promoted in Montana, where it is an unnecessary luxury, and I am unwilling to say that the frigid air-conditioning of the offices of Consolidation Coal Company in Billings, Montana, is so important that the Bull Mountains should be forever destroyed for the sake of the coolness of a group of sedentary office-workers and others like them in other areas of the country.

At present twenty-three big coal burning electricity generating plants are being planned for location in Eastern Montana. Eastern Montana is about to become a smoke polluted spoil bank, and the electric companies and the coal companies think they will get away with it, because Eastern Montana is thinly populated and slow of pace. By building the plants and mining there, the fact of pollution and destruction of the land will be hidden, they hope. The corporate giants know that they dare not build such plants in Chicago, Detroit and St. Louis, so this is an attempt to cover-up the ecological cost by placing the plants and mines in a thinly settled area and disregarding the rights of those people to a liveable environment, too.

Correspondence with various state mining control departments in the East leads me to the conclusion that all efforts at State regulation have failed, and to the conclusion that Montana's initial effort will have as much effect as holding up a powder puff to stop a whirlwind. I am also afraid that even if it were possible to effectively reclaim the land that there would be a possibility that any mining administrator would have a tendency to become a tool of the mining companies than to be active in protecting the public interest. That has been the classic case with the Food and Drug Administration. I think we would do well to take a lesson from the people who have suffered the most extensive harm from the effects of strip mining, the West Virginians. After thirty years they find co-existence with strip mining impossible.

If the Consolidation Coal Company plans to be mining in the Bull Mountains for 100 years, it should not be allowed to come, skim the cream off the top by stripping, and then begin to seriously put down underground mines, leaving the surface owner to live among tumbled spoil banks.

The laws regarding mineral reservations and rights between surface owner and mineral owner were made long ago, when technology had not progressed to the point of not only seriously limiting the surface owner's right to use the surface, but to entirely destroy the surface use. With the present strip mining technology there is no equity between the two owners. Unfortunately this area was developed at a time when Big Government and Big Business were both extremely greedy for land, minerals, and money. The history of the West has been full of heartbreak for the little and powerless men who were lured to the settlement of these Western lands. When the U.S. Government granted the Northern Pacific Railroad these lands as a land grant railroad, the railroad abused its privileges and obtained more land than Congress has contemplated. For a history of the relations between the Northern Pacific Railroad and the United States see *United States v. Northern Pacific Railroad Company*, 41 F. Supp. 273 (1941). In the original grants to the railroad, it was contemplated by Congress that the railroad should divest itself of the lands granted to the railroad within a relatively short period of time. This was to be done in order to encourage the settlement of the West mostly to control the Indians.

Thirty years later and forty years later, the railroad was still in control and possession of the granted lands, which were apparently selling at a very slow pace. The railroad was somewhat restricted in its hawking of the wares, so the officers of the railroad got together in 1896 and created a wholly owned subsidiary of the railroad called the Northwest Improvement Company. The corporate charter of the Northwest Improvement Company authorized it to go into the business of selling townsites, and doing everything necessary for building

a town, including paving streets and operating the utilities. The Northwest Improvement Company was authorized to encourage immigration West. From what I understand talking to older people, the Northwest Improvement Company did advertise and persuade the poor people to come West to the cheap lands, and mute evidences of their dreams still stand on the prairies. The agricultural authorities of the time told the settlers that if they plowed the ground that it would rain and trees would grow, but it didn't rain and it was disaster for the settlers. Those that stayed and survived in most cases survived by using for nothing lands of those who had been forced to leave. Out of the debacle of the small farmer began to come the small to medium-sized rancher with larger portions of land. From disaster the people realized that the Bull Mountain was utterly unfit for small farming in any fashion. The one-half section granted to the homesteaders was a prescription for death by starvation. The smallest place to my personal knowledge where a family managed to stay and hang on was 740 acres, but an examination of the old homestead house shows the depth of the poverty when one discovers homemade coat hangers from wood and string. The railroad merely wanted the money from this land, as did the U.S. Government.

Easterners who had no knowledge of this land dreamed up the rules for its disposition and their lack of knowledge brought disaster to those who purchased under their rules. The Easterners again who have put no labor and love into this land now wish to come again and once again demonstrate their understanding by proposing to strip mine and partially repair the same land they once sought to turn into a farmer's field. It is the same ignorance which thought that plowing brings rains which leads the coal companies to claim that the Bull Mountains and Eastern Montana can be adequately reclaimed and be made a sweet and water-bearing land again after the blasting and the stripping. Apparently those settlers and those who came after them who have made a life and a living in the Bull Mountains, Eastern Montana and other parts of the Rocky Mountain West similarly threatened have only been tenants at sufferance waiting out the interval for the time when Eastern money would once again turn avaricious eyes toward the West to gain the last dollar no matter the cost.

Strip mining is radical surgery to gain the last dollar, and I think it must be eliminated by immediate and radical surgery. We must learn that the land is alive, and the passage of Representative Hechler's bill is necessary to keep the land alive.

(The exhibits referred to in the statement were retained in the committee file.)



