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REGULATION OF SURFACE MINING OPERATIONS

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HEARINGS

BEFORE THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS UNITED STATES SENATE

NINETY-THIRD CONGRESS

FIRST SESSION

ON

S. 425

A BILL TO PROVIDE FOR THE COOPERATION BETWEEN THE SECRETARY OF THE INTERIOR AND THE STATES WITH RESPECT TO THE REGULATION OF SURFACE MINING OPERATIONS, AND THE ACQUISITION AND RECLAMATION OF ABANDONED MINES, AND FOR OTHER PURPOSES

S. 923

A BILL TO PROVIDE FOR THE COOPERATION BETWEEN THE FEDERAL GOVERNMENT AND THE STATES WITH RESPECT TO ENVIRONMENTAL REGULATIONS FOR MINING OPERATIONS, AND FOR OTHER PURPOSES

MARCH 13, 14, 15, AND 16, 1973

PART 2

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

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REGULATION OF SURFACE MINING LEGISLATION

THURSDAY, MARCH 15, 1973

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The committee met at 10 a.m., in room 3110, Everett McKinley Dirksen Building, Hon. Lee Metcalf, presiding.

Present: Senators Metcalf, Fannin, Hansen, McClure, Bartlett, Buckley, Hatfield, and Johnston.

Also present: Jerrry Verkler, staff director; William Van Ness, chief counsel; Mike Harvey, special counsel; Harrison Loesch, minority counsel; and Fred Craft, assistant minority counsel.

Senator METCALF. The committee will be in order.

This is a continuation of hearings on S. 425, S. 923, and S. 1163, all bills relating to surface mining legislation.

This morning, out of order, in order that he may take a plane, I am going to call the first witness, Mr. Ernest D. Preate, attorney of Scranton, Pa.

We are delighted to have you here to kick off the third day of the hearings.

Mr. PREATE. Thank you very much, Senator.

STATEMENT OF MR. ERNEST D. PREATE, JR., ATTORNEY, SCRANTON, PA.

Mr. PREATE. I appreciate this opportunity to appear before this committee to express my views on surface mining legislation presentiy pending before the Congress.

I regret to inform the committee that because of the nature of my testimony, I do not have available at this time a detailed, written statement for the committee's edification.

However, with the permission of the Chair, I would like to submit within a day or two the written statement.

Senator METCALF. We would be delighted to have a written statement. And, I am going to start with what I will be saying all day, if you will summarize your prepared statement, we would be delighted.

Mr. PREATE. Mr. Chairman, although I am not here today representing any one of my clients or any particular group, I do believe that because I have lived amongst the strip mines of northeastern Pennsylvania for most of my life, and because of my concentration in the past 3 years on surface mining legislative drafting and enforcement problems, that I have some ideas and thought that might be of benefit to this committee.

In view of the mining industry's testimony yesterday, I think that this committee should be reassured to know that the industry's arguments would not have surprised very many State legislators who, over the past few decades, have listened to much the same kind of talk of threats of brownouts and power blackouts and shutdowns and economic catastrophe.

These threats have been heard before by the people of Pennsylvania and other States since 1945. When Pennsylvania passed its first surface mining law, we amended that law nearly a dozen times since 1945, culminating in November of 1971, with the enactment of the new 1971 All Surface Mining Act, which pertains to all minerals in Pennsylvania.

This is the strictest law that Pennsylvania has ever had, and it has been heralded in some quarters as being a marvelous piece of legislation, and Senator Jackson referred to it when he introduced the bill which you, Senator, cosponsored.

The problem with the industry's concern over stringent controls in view of strong legislation that had been passed in the States does not meet the test of statistics and time. It seems to me that in the face of the increasingly stringest State laws that have been enacted, that have been cited in the present CEQ report released a short time ago, that strip mining production has, indeed, increased and that the operators have increased in areas and States where there have been strong surface mining laws.

I think it is not only true of Pennsylvania, but can also be said to be true of Ohio, West Virginia, Kentucky, Illinois, Montana, Wyoming, and other States that have passed regulatory laws which, curiously enough, never seem to have the doom effect that the industry says it will have.

In short, we are entering the third decade of protest in the mining industry that they can operate within strict controls. Let's be realistic in this regard. The coal company or copper company is never going to give up mining a mineral deposit of such wealth as found in your State, Senator Metcalf, or in Arizona, or in Idaho, or Utah or Arizona, simply because the cost of adequate reclamation might come to about a dollar a ton.

I think that some of the proposals the industry put forward that it would cost in the neighborhood of millions and even billions of dollars to reclaim some of the open pits in the West if they had to backfill to the approximate original contours is a specious argument because nobody is asking them to backload the contours, to backfill to the approximate original contours.

In any event, in the coal deposits, for example, in Montana, where we would have coal seams that are a hundred feet thick, and in Wyoming some are 200 feet thick, you are talking about the extraction of maybe 90,000 or 100,000 tons of coal per acre.

And, if you spend a dime per ton of coal mined, you still are only spending $9,000, and that is not a relatively large amount considering the profits you are making on that acre of coal compared to the profits we would make in the East, where you mine 4,000 tons of coal, relatively speaking, in the average acre.

For $9,000, $10,000, even $20,000 an acre, they can afford to import top soil from Iowa, or even some of Chicago's sewage treatment.

I think, Mr. Chairman, that the American public sympathizes with you in your task and the committee's task that it must face up to in the drafting of a strong but fair surface mining law, regulatory bill.

This is my philosophy. I am not an abolitionist, but I have strong feelings that there should be a strong regulatory bill that should come out of this Congress. But, what bothers you, I am sure, is just what is a strong and fair bill?

I think in this regard, Mr. Chairman, I should suggest that the thoughts expressed 2 days ago by Deputy Secretary Horn of Pennsylvania, chairman of the Interstate Mining Compact, who testified then, his thoughts are most relevant.

He said it would be unfortunate, indeed, if the experience and expertise of the States that have been regulating surface mining for years is not taken advantage of by the Congress. I would also submit that the committee should pay particular attention to the recent State mining laws that have been enacted because, as the March 1973 study by CEQ points out, they represent a progression toward stronger controls to reduce environmental damages from strip mining.

I believe the committee heard testimony of the deputy secretary from Pennsylvania when he noted that in Pennsylvania, for example, the ore mining on slopes in excess of 14° would be performed utilizing the modified block-cut method of mining, which is a relatively strict constraint placed upon the mining operators in Pennsylvania.

He also noted, in response to some of the questions that were asked by the panel, that since 1964 high walls have never been allowed to exist at the end of mining in Pennsylvania. I remind this committee that Pennsylvania is one of the major coal producers in the United States, yet these restrictions have not diminished the amount of surface coal produced, nor the number of surface miners operating.

Other States require similar types of backfilling to various degrees and the surface coal production shows no signs of slipping. Most States, like Pennsylvania, require the operator to prevent acid mine drainage and avoidable soil erosion.

The industry, in its testimony yesterday, made much of the fact that these kinds of absolutes would have detrimental effects and even catastrophic effects on their production. But, these kinds of constraints have been in Pennsylvania laws and other State laws for long periods of time.

For example, I read from the 1971 Surface Mining Conservation and Reclamation Act of Pennsylvania, which sets forth that:

> * * * no permanent approval shall be granted unless the plan of the operator provides for a practical method of avoiding acid mine drainage and preventing avoidable siltation or other stream pollution.

Then, in a definite absolute it says:

> * * * failure to prevent water from draining into or accumulating in the open pit or to prevent stream pollution during surface mining or thereafter—

This is after the operation is completed—

> shall render the operator liable for sanctions and penalties provided in this act and under the Clean Streams Act of Pennsylvania and shall be cause for revocation of the permit or license, and shall render him liable for criminal sanctions.

That is a portion of Pennsylvania's laws. This is one of the reasons it is a tough law because it does set down these very definite guidelines.

When this section of the law was set forth in 1965, there was a great deal of cry by the industry that there was no technology to meet this kind of criteria, that they could not prevent sedimentation, avoidable sedimentation or acid mine drainage.

Yet, within a year after this law went into effect, there were some 250 treatment facilities built by the operators to do exactly what the law required. And, in Pennsylvania, right now, they are treating to almost neutrality the acid that is coming from their pits.

And, the sedimentation problem that exists in Pennsylvania, soil erosion on soil banks, soil erosion regulations in Pennsylvania which would require the operator to take out and treat the sediment himself in settling ponds, and before he discharges that sediment in a clean stream, that it has to be treated to near tap water quality. I think it is somewhere in the neighborhood of 200 parts per million of water.

These are things that can be done. There is no dispute about that. There is no new technology involved in this sort of thing. I don't think the committee should feel any particular pressure because of what the industry says, it might drive them out of business.

It simply is not going to happen because their track record in the past has indicated that they have been able to do these kinds of things. They are doing them in most States in the United States right now. And, for the industry to come before this body and say that they would have a deleterious effect in their production of any kind of mineral, I think is simply not true.

Even in West Virginia, I have a copy of the "Drainage Handbook" here for surface mining, produced January 1, 1972, from West Virginia. That states very clearly there are various methods that may be used to eliminate, the word "eliminate" is an absolute, sediment problems, provided they are skillfully planned and applied, and it lists about six or seven things that can be done to eliminate sediment.

You are talking about absolutes even in West Virginia. So, this committee should not feel, as I said, under any particular restraint because of the use of some kind of absolute word, as in Mr. Jackson's bill.

He points out the word "insure" a dozen or more times, and that's exactly what the States are saying. They are saying, "you have to insure, you have to guarantee there is going to be none of this; you have to prevent it. If you don't prevent it, you are liable to sanctions and penalties."

I should also like to point out that yesterday the industry spokesman proclaimed Senator Jackson's bill, S. 425, section 215(c)(1), which prohibits surface mining within 100 feet of a road, lake or stream, or tidal basin, would drive them out of business.

It is difficult to envision how the loss of a mere 30 yards of surface, even a 10-acre surface mine, is going to have such a catastrophic effect as that.

Pennsylvania has a 100-foot restriction, and even though it has a proviso on it that allows the Secretary, in his discretion, where special circumstances exist, and after public notice and public hearing, that they would be allowed to take that particular piece of property or put

top soil on it or store some spoil on it. I think that this committee can surely, with its expertise, draft a provision which is not going to be rendered in that kind of absolute term.

But, even more striking is the fact that the Federal Government's own Tennessee Valley Authority, in its reclamation conservation requirements, has an interesting provision. Of course, Tennessee Valley, as you know, is the major consumer of coal produced in the United States, and it requires of its contractors the following:

"Refrain from all mining and associated activities within 100 feet of a stream, except that roads may be constructed within 100 feet of a stream, where approved by TVA."

Here, the Federal Government has laid down the same kind of restriction which the industry yesterday came before this committee and said that that was going to drive them out of business. I think there is a lack of credibility here on the part of the industry when actually the TVA, the chief consumer of coal in the United States, does require its operators to meet that kind of constraint.

Mr. Chairman, I think it is quite evident that with careful draftsmanship, a bill to rectify the major complaints of the mining industry to S. 425 can be achieved. I don't think that there is any lack of expertise in this committee and the staff that sits behind this committee, that it can come up with what Senator Jackson called for; that is, a law that applies for all surface mining, and it would set some uniform standards, minimum guidelines which the States can take hold of and promulgate effective uniform regulations for the mining industries within their own borders.

I do have some comments I would like to make about the Senator's bill, S. 425. There are some conceptual problems with it, but I don't think they are so severe they can't be rectified.

I think that probably we should go right to the start of the matter here; that is, the Senator set forth a requirement that the purpose of the bill would set up a primary enforcement mechanism in the States, and that the Federal Government would actually have supervisory authority. This would be in sections 206 and 207. This would be the force of those two sections.

The moratorium section, which is 206, and the permit section, which is 207. The aim of the bill, the thrust of the administration's bill is quite clearly to put the enforcement in the States.

But, what I am afraid is happening here, the total effect under the actual provisions of the Jackson bill and the administration's bill, would actually be to turn the situation around and make the States want to give that enforcement of the surface mining law to the Federal Government, and that would operate in a kind of manner, as follows:

The permits that would have to be issued under this program, under a State program, could not be issued until a State program is approved. Of course, a State government could not submit to the Federal Government until the Federal Government has published and promulgated regulations.

The industry pointed out yesterday that that process may take about 24 months. So, during that time, there would be a moratorium under section 206 of the Jackson bill, unless there were certain operations that were operations of a national—of a crisis nature, an emergency nature, and the exceptions to it are spelled out.

But, for the most part, all surface mining operations of coal would be prohibited during this period, this major period of time.

They complained about that, but what they failed to say is that there can be a way to draft a piece of legislation that would take up that kind of objection. I think that one of the things that possibly can be looked at by this committee is the concept of an interim permit, in which the operators during this period in which the Federal Government is promulgating regulations and they are coming up with a State program, this interim permit would work based upon the State regulatory's own authority.

They have ongoing programs, ongoing administrations, and ongoing regulatory functions. They could issue a valid permit under the Federal law based upon this Federal law effective on day one of enactment. At the same time, start to prepare and help the Federal Government prepare its regulations and come up with its own State program.

In this way, you don't have a moratorium on coal over the next 2 years. You get an interim permit system. You have everyone moving in the same direction based on Federal law.

What that does to the Federal law, however, is that it would probably require that the Federal law be a little more specific, and I think that is possible, too. You could have a very specific bill that would apply to a number of different situations, a number of different minerals, and a number of different States.

There are other sections in S. 425 which I think need clarification. This would be section 208–B., which is the bonding provision that the industry complained about yesterday, and rightly so. That needs a little bit of work, but I don't think it is insurmountable.

I think what needs to be stated here, very frankly, is that your permit for your performance bond for a mining area should not cover the total area within the permit. It should cover just that portion of the area that is going to be mined at that particular time.

Because, it has been found and discovered by the States through their own experience, that if a company takes an 800-acre piece that it says it is going to affect, it may, in fact, affect only 55 or 60 percent. And, if it affects 75 percent of that land, it is an excessive amount because of certain restraints placed upon it by market demands, by failure to get surface owner's rights, or whatever it happens to be, or equipment problems.

So, you wouldn't want to have the industry bound up in a bonding provision which would keep that industry tied to an area of land affect which they may have all ready reclaimed previously or may never affect in the future.

You want to tie them to the area that they are operating—actually operating on at one particular time, and make the requirements so that they would have a release as they finished certain portions of their mining operation. I think that's a fair provision, and it's that way in Pennsylvania and in other States. I think there is no reason why it can't be drafted this way in a Federal bill.

The industry had some questions about open pit mining. Some of the problems with open pits, the open pit provision in Senator Jackson's bill. I think that those two can be overcome with careful drafting and the application of techniques that have been acquired through the years by the States.

I don't think there would be any necessity, for example, to restrict open pits merely to copper or some other minerals, as it presently may be inferred in Senator Jackson's bill. Coal, for example, in eastern Pennsylvania is open pit mining, and there has been open pit mining in Pennsylvania for 30 or 40 years of anthracite. There is a coal seam 60 or 70 feet thick.

So, I think in those particular areas there should be some provision for open pit mining and coal. Even, indeed, as the Coal Association pointed out in its testimony, there are very thick veins in the West which are going to require open pits in order to mine them. You are not going to be able to mine them with the simple kind of grading operation that you have in some of the flatter terrain areas.

I think you have to draft a bill, however, so there is some kind of environmental protection within these parameters. I think that some of the industry's objections, for example, to the fact that Senator Jackson's bill requires that there be no alternative source of this mineral, domestic source of this mineral. They said, "that would affect our balance of payments problem."

I think that that provision isn't necessarily tied in and wedded in in this section of 212. You probably can write a very good section on regulating large, open pits by eliminating that and talking about the overburden ratios to the coal, or whatever mineral it happens to be, and stating that there is no practical alternative method of mining that particular mineral.

That is what I think was in the minds of the legislative drafters when that bill first came out, but I don't think they actually put it in the words they wanted used. But, I think that can be changed, too.

There are a lot of problems, too, with reclamation in copper pits and iron ore pits in the West, and certainly the industry has reason to make judgments about the kind of reclamation that can take place there.

But, I think they can be reclaimed to a large extent, using present technology. And, of course, there is a great deal of profit in the mining of those particular kinds of ores. It is not a low-quality kind of industry. It is a very high-profit industry.

I think that the requirements, for example, on open pit reclamation would include such things as step terracing, which the industry pretty much practices now in these open pits. And, except in areas where there would be a toxic substance exposed on the face of the high-wall terraces, that those high-wall terraces would have to be regraded back to a slope angle that machinery can traverse of 20 to 25 degrees, somewhere in there.

These are all in technology. And, if, as the mining industry says, it takes it 10 years to get an operation like this into production, well this can be planned.

I visited, myself, a uranium operation out in Douglass, Wyo., and they have all ready planned their extension there for 30 years. It's going to be a large, deep pit, covering 800 acres or more. This is Humble Oil Co.'s operation out there.

Senator HANSEN. If I can interrupt, Mr. Chairman, despite my intense interest in what the witness is saying, I note that it is 10:30. I would also call attention to the fact that from my State of Wyoming, here with us is State Senator Malcolm Wallop, sixth on the list of witnesses.

I don't know what your thought is, but I have seen us in the situation so many times of listening, I think, too long to people who have very worthwhile proposals. But, I am certain it is not the intention of this witness to deny others the opportunity to be heard. Yet, I suspect that that is precisely what is going to happen.

Mr. PREATE. I apologize.

Senator HANSEN. I am not asking you, I am asking the Chair.

Senator METCALF. I would say to the Senator from Wyoming that this committee has tried to be very patient with the witnesses that have appeared to testify. We've had the administration and Senators and governmental witnesses the first day.

Yesterday, we had a rather long day, and I thought a very fruitful day, and we heard from the mining industry. Today, we are going to hear from several large conservation organizations and people representing major societies that are concerned about environment.

And, I would hope, however, that the witness, although he is making a very interesting statement, would speedily conclude and I would hope that all other witnesses would also restrain so we won't have to run until 7 or 8 o'clock again tonight.

Senator FANNIN. Does the witness have a written statement?

Mr. PREATE. I'm sorry, Senator, I do not have. Because of the nature of my testimony, I ask that I be allowed to submit a statement within a day or two, as soon as I get it typed up.

Senator FANNIN. Well, the committee has other assignments and won't be here indefinitely.

Senator METCALF. I want to say to the Senator from Wyoming that, as he mentioned, his very distinguished constituent, number six this afternoon, is here, and we have a high regard for his background and experience.

I am going to move up Dr. Robert Curry, who electrified this committee last year in his testimony about clearcutting, and I am sure there will be some questions about it. I think that I will move up Senator Wallop, to appear as the second witness this afternoon.

Senator HANSEN. That is kind of you, Mr. Chairman. I appreciate it, and I don't mean at all to imply my lack of interest in what the witness is saying. I just know how easy it is to have us consume a great deal of time and then deny those persons who have come a long distance an opportunity to be heard. There was a handful of people here at about 6 o'clock. I've been around here a few times and have seen that happen.

I must say, Mr. Chairman, that I will have to go to an executive session of the Finance Committee to vote on a procedural matter right now, and I am sorry I won't get to hear more of what you are saying.

Senator METCALF. Mr. Preate, I am very interested in your analysis of the bills, your suggestions as to how they should be drafted. Of course, the fundamental proposition you have presented is one that concerns this committee, and that is that there has been considerable experience in the various States on surface mining and coal mining over the years. They have passed legislation, and amended legislation. We are going to draw on that experience, and we certainly welcome your attention to the experience of the State of Pennsylvania, which has suffered from depredations and exploitations, and at the same time has answered back and tried to make corrections.

Can you summarize and then submit a statement, please, on S. 923 on your analysis? You have made a very lawyerlike analysis of S. 425. As a lawyer I know you can help us in preparing some of these sections so that they do meet the problems that were raised yesterday and that we want to confront in this hearing.

Thank you, Senator Hansen.

Mr. PREATE. I just have one final point. I'll make it as briefly as I can.

The section dealing with the protection of the surface owners, section 410 of Senator Jackson's bill, S. 425, is, I think, apparently taken from the Mining and Minerals Policy Act in 1970. It does create some problems, constitutionally.

I am not suggesting for any reason that I have a definitive answer on this. But, I do think that the section, as presently drafted, has some serious problems with respect to protection of the surface owner; in fact, because of the diversion of the surface's state and the minerals.

I think what I am suggesting here is that the Federal Government might only be able to promulgate a law which deals wth the surface rights on Federal land, and that's about as far as its authority could extend.

It may also be able to enact some kind of a law which would require its agencies, such as TVA, or its armed services, to restrict the purchase of coal that has been surface mined from land where the owner of that land has not given his consent to the operator to mine that coal. That, I think, is as far as the Congress can go in enacting that kind of law.

In this area, each individual deed is most important, the language in each individual deed is most important, and I think it may be extremely difficult to draft a law which says it requires the written consent of the surface owner in all instances. That's my final comment.

Senator METCALF. If an owner in fee, who has both surface and underground mineral rights signs a lease, isn't that written consent?

Mr. PREATE. If the surface owner signs a lease?

Senator METCALF. No, the owner in fee. We have grave problems, as all of us from the West know, where we have grazing homesteads and there is a split in title between the owner of the surface rights and the owner of the minerals—usually the Federal Government or some leasee from the Federal Government is.

But here, in the East, where you have a fee title—both underground rights and surface rights, and a man gives a lease, isn't that a permit?

Mr. PREATE. In Pennsylvania and West Virginia and Maryland there is a separation of title, just as there is in the Western States.

Senator METCALF. Did it emanate originally from an original fee title?

Mr. PREATE. Well, in Pennsylvania, everything came by William Penn. But, somewhere along the line, there was a separation that would occur when there were minerals discovered. And, usually, the companies who owned the land reserved the mineral, sold the surface, and then leased it off to a coal company.

But, our Pennsylvania courts have held that you have to look at each individual deed in order to determine whether or not written consent is required. I think that's the way it should be in the Western States, too.

There has been a separation of the surface and mineral rights in States in the West, and each individual deed has to be carefully examined because there was a Colorado case in 1970 which seemed to indicate that you have to specifically spell out, for example, if there is—if you want to surface mine particular property, you have a lease for the minerals underneath that property.

If you are going to surface mine it, it had better be pretty much specified in the deed that you have the right to surface mine, otherwise you have the ordinary right to mine.

It seems to me, under the Case law, as it presently exists, it does not give a coal company or mineral company the right to go in and take the surface.

Senator METCALF. I think that we, who are familiar with some of the landlords of the West, perhaps haven't given careful consideration to some of the aspects of this on Eastern law, but you have raised a flag about it, and our staff will look into it. I think we will come back with a law that will stand up under a constitutional test.

Well, thank you very much, Senator Fannin.

Senator FANNIN. Thank you, Mr. Chairman.

Mr. Preate, you have spoken in general—in generalities and referred to the copper companies as having resources and having the profits and all.

I don't know whether you realize that we operate, in many of the Western States, on very low-grade ore. In fact, you might be surprised to know that some of our companies have had to close in the last few years because they could not operate profitably. So, it isn't the rosy picture you painted.

But, you spoke in generalities. Would you speak in specifics to the actual costs, as you have figured them, to the consumer of the reclamation that you say can be accomplished with present-day technology?

Mr. PREATE. With respect to what particular mineral, sir?

Senator FANNIN. Well, you were speaking in generalities. How would you analyze copper for instance?

Mr. PREATE. I think there are very few studies that have determined what the actual cost is going to be as an average. However, I think, as the administration pointed out when they testified on Tuesday, there have been one or two studies made in this area. And, one of them is the CEQ study, which talked about the reclamation costs associated with coal reclamation in Appalachia.

I think that they—they utilized various methods of mining, and concluded that terracing might cost 96 cents, and approximate, original contour may cost somewhere between 50 cents and 75 cents.

Senator FANNIN. Copper mines are not in that position, since they are open pit. A pit in Arizona will be operating 30, 40, 50, 60 years in one site. Can you apply your statement to that kind of operation?

Mr. PREATE. That's correct, because I don't think anyone seriously contends that the copper people have to backfill those pits to approximate, original contour.

Senator FANNIN. Well, you are an attorney. In your profession you consider semantics and the use of language. The miners, as I understand, don't object to mandatory language, but rather to the requirements which cannot physically be achieved.

Why would you advocate language like "preventing adverse effects to society," instead of pragmatic language such as "control insofar as possible the adverse effects on society"?

Mr. PREATE. I think language like that, you can draft language that says "control" or "prevent." There is no reason why that can't be utilized in any Federal legislation. It's used in the State laws. I don't think that I particularly ascribe to everything that is in Senator Jackson's bill on the regulations.

You may not have been here when I made this point, but I did—I didn't think that the section on open pits was properly drafted, and I think it has to be redrafted. The industry made some good points yesterday, and I tried to make that clear.

Senator FANNIN. I do think it is a complex situation.

Mr. PREATE. Yes, it is.

Senator FANNIN. I am sorry I was unable to hear your full statement. I was really alarmed at some of the statements which you made, fearing you had a misconception of how the mining industry operates in the West. Thank you.

Senator METCALF. Senator Hansen.

Senator HANSEN. No questions.

Senator MCCLURE. Mr. Chairman, I am not going to take any time to ask questions, although there are several I have in mind. I am just looking at the clock and recognizing that 16 people on the witness list, three-quarters of an hour for each means 12 hours, and you know and I know that we are not going to sit here for 12 hours today and listen to witnesses.

So, necessarily, what we have done already is to deny some of the witnesses the opportunity to make their statements as fully as they would like.

But, I am very much interested in what you have said, and I would hope that when you do prepare your remarks, even in the detailed rebuttal to some of the other witnesses that have appeared, that you will do so with the expectation that we will look at them, because, indeed, I intend to do so. I think you made some constructive comments, and I hope your prepared statement will expand on some of those and fill in on some that have not been touched.

But, I am particularly requesting that you expand on this problem of the surface-subsurface conflict, where there is a division of title, because I, like you, am somewhat doubtful as to how far the Federal Government can or should go in dealing with title to real estate, which has been primarily regulated by State statute insofar as our Constitution permits. So, I do look forward to receiving your further statement.

Senator METCALF. Senator Buckley.

Senator BUCKLEY. Mr. Chairman, I would merely echo the remarks of Senator McClure, and thank the witness for his comments.

Senator METCALF. I would appreciate it if you would give us a couple of citations on the matter that we discussed and Senator McClure discussed so the staff can give us a rundown.

Mr. PREATE. I have those cases available.

Senator METCALF. Thank you very much.

[The prepared statement of Mr. Preate follows:]

STATEMENT OF ERNEST D. PREATE, JR., ESQUIRE, SCRANTON, PENNSYLVANIA, ON SURFACE MINING LEGISLATION BEFORE THE SUBCOMMITTEE ON MINES AND MINING, COMMITTEE ON THE INTERIOR AND INSULAR AFFAIRS, UNITED STATES SENATE, MARCH 15, 1973

Mr. Chairman, I appreciate this opportunity to appear before this Committee to express my views on the Surface Mining Legislation presently pending before the Congress.

Although I am not here today representing any one group of any client, I do believe that because I have lived amongst the surface mines of Northeastern Pennsylvania for most of my life and because of my concentration as an attorney in the past three years on the problems of drafting and law enforcement of surface mining laws, my thoughts may be of some assistance to this Committee.

In view of the mining industry's testimony yesterday, I think that this Committee would be reassured to know that the industry's arguments would not have surprised many state legislators who have listened over the years to much the same kind of talk. Indeed, threats of brownouts, mining shutdowns and economic catastrophe have been heard by the people of Pennsylvania and other states since 1945 when Pennsylvania passed its first strip mining law. We've amended that law nearly half a dozen times since then, culminating in November of 1971 with the passage of a new Surface Mining Conservation and Reclamation Act covering all minerals surface mined in Pennsylvania. This Act has been referred to as model legislation and, indeed, Senator Jackson, when he introduced S. 425, noted that among the sources of S. 425 were "the provisions of better state laws, such as that of Pennsylvania." In addition

to this stronger new law requiring reclamation of land disturbed in surface mining, Pennsylvania water quality laws have required mining companies to treat mine water discharges to near neutrality since 1965 and this year Pennsylvania will promulgate Soil Erosion regulations which will require that the amount of soil sedimentation permitted to flow into Pennsylvania streams from land disturbance activities to be reduced almost to tapwater purity.

And yet, in the face of all these increasingly strict controls, coal strip mining has increased in Pennsylvania. The same can be said of Ohio, West Virginia, Kentucky, Illinois, Montana, Wyoming and other states that have passed regulatory laws which, curiously enough, never seem to have the doom and gloom effect that the mining industry says they will have. In short, gentlemen, we are entering the third decade of protests from the mining industry that they cannot operate with stricter controls.

Let's be realistic - no coal company is ever going to give up the mining of a mineral deposit of such wealth as is found in Montana or Wyoming, simply because the cost of adequate reclamation might be a little less than a dollar per ton of coal mined as has been estimated by the President's Council on Environmental Quality in their March, 1973 report to this Committee on Surface Mining in Appalachia. At many of the proposed stripping sites out West, the thickness of the coal seams per acre is so great that the cost per ton of decent reclamation might be reduced to 10 or 15 cents per ton. With those kinds of profits, mine operators can afford to import topsoil from Iowa or even Chicago's sewage

to fill their open pits.

I might add that the industry's claim yesterday, that reclamation of large open pits could cost millions - possibly billions of dollars, if backfill to approximate original contour were required is specious; no bill presently being considered by this Committee, requires that type of reclamation of large open pits.

Mr. Chairman, I think the American people sympathize with this Committee and the task it faces in coming up with a strong but fair regulatory bill. But what bothers you, I'm sure, is just what is a "strong but fair" bill. In this regard, Mr. Chairman, may I suggest that the thought expressed by Deputy Secretary Heine of Pennsylvania, the Chairman of the Interstate Mining Compact, who testified on Tuesday, is most relevant: He said it would be unfortunate if the experience and expertise of the States who have been regulating surface mining for years is not taken advantage of by Congress. I would also submit that the Committee pay particular attention to the recent state surface mining laws that have been enacted because, as the March, 1973 study by the President's Council on Environmental Quality (CEQ) points out, they represent a "progression toward stronger controls to reduce the environmental damages from Surface Mining" (CEQ Study, p. S-11).

I believe the Committee heard the testimony of the Deputy Secretary from Pennsylvania when he noted that in Pennsylvania, all mining on slopes in excess of 14° would be performed utilizing the modified block cut method of mining and that since

1964 highwalls have not been allowed to exist at the end of mining.

I would remind the Committee that Pennsylvania is one of the major producers of coal in the United States and yet these restrictions have not diminished the amount of surface mined coal produced nor the number of surface mining operators. Other states require similar types of backfilling to varying degrees and their surface mining coal production shows no sign of slipping.

Most states, like Pennsylvania, require that the operator prevent acid mine drainage and avoidable soil erosion. Pennsylvania's new Surface Mining Conservation and Reclamation Act requires in Section 4 (a) (k) that:

> The application (for a surface mining permit) shall also set forth the manner in which the operator plans to divert surface water from draining into the pit and the manner in which he plans to prevent water from accumulating in the pit. No approval shall be granted unless the plan provides for a practicable method of avoiding acid mine drainage and preventing avoidable siltation or other stream pollution. Failure to prevent water from draining into or accumulating in the pit, or to prevent stream pollution, during surface mining or thereafter, shall render the operator liable to the sanctions and penalties provided in this Act and in "The Clean Streams Law", and shall be cause for revocation of any approval, license or permit issued by the department to the operator.

These are strong legislative words and impose the absolute standard of "preventing stream pollution" upon the mining operator. It is words like "prevent" which give a law its enforce-teeth.

West Virginia, like Pennsylvania, a major surface coal producing state, was not afraid, either, to impose absolute standards on its coal industry. On page 2 of The Drainage Hand-

book for Surface Mining, prepared by the West Virginia Department of Natural Resources and published on January 1, 1972, the Department lists nine methods that may be used by mining operators "to eliminate sediment problems." On page 3 of the same Handbook, the Department sets forth three control methods for "the abatement of acid water." The words "prevent", "eliminate" and "abatement" set strong standards and this Committee should recognize that state laws and regulation governing surface mining have utilized such words.

Yesterday the industry spokesmen proclaimed that Sec. 215 (c)(1) of S.425, which prohibits surface mining within 100 feet of a road or lake, or stream would drive them out of business. It is difficult to envision how the loss of a 100 foot ribbon of surface from even a 10 acre surface mine would have such a catastrophic effect. Pennsylvania has a 100 foot limitation, albeit with a proviso, which can surely be of assistance to the Committee in rewording the language of the bill. For that matter the Federal Government's own Tennessee Valley Authority has a rather similar prohibition in its Reclamation requirements which states that "the contractor ... refrain from all mining and associated activities within 100 feet of any stream, except that roads may be construed within 100 feet of a stream where approved by TVA."

Mr. Chairman, it is my firm belief that with careful draftsmanship a law can be obtained which imposes strong but fair controls on the surface mining industry of America. In this regard I have the following comments to make with respect to S.425.

It is the declared finding of S. 425 that primary enforcement of the Surface Mining and Reclamation operations subject to the Act, should rest primarily with the states in the proper exercise of their police power authority. In order to entice the states to enact surface mining laws and to assume this responsibility, the Act sets forth in Title 3 and Title 4 some provisions for financial assistance through grants; but, the prime means of achieving the desired state enforcement is set forth in Section 206 which is the Moratorium section. That section places a moratorium on the opening or expansion of surface coal mines in a particular state after the date of the enactment until that state comes up with an acceptable State Program under the provisions of the Act. Although Section 206 does contain a proviso, nonetheless, by its terms it is so limiting that there would be very few existing surface coal mining operations which would qualify for continuation after the date of enactment of S. 425. Under the provisions of S. 425, this moratorium would continue until the state came up with an acceptable State Program or a Federal Program were implemented for that state.

Reading Section 206 in connection with Section 205 which sets forth when a Federal Program can be implemented for a state, it becomes clear that a Federal Program for a particular state could be implemented prior to the formulation and implementation of that particular state's own program. Section 205 provides that a Federal Program for a state can be implemented at the conclusion of the twelve month waiting period after the date of

promulgation of Federal Regulations. Federal Regulations may be published and promulgated within three months to eight and a half months after enactment of the Act. A Federal Program, therefore, could be implemented for a state between 15 and 20-1/2 months after the enactment of S. 425.

Those states with biennial legislatures, or with department organizational or financial problems, may be hard pressed to submit their State Program for approval by the 15th month after enactment or even the 20th month. Most probably they will barely be able to make a submission within two years as has been the case under the Federal Water Quality Control Act. Under these circumstances, it is not inconceivable that the mining industry would pressure state government to forego its responsibility of coming up with an acceptable State Program and urge the state government to request that a Federal Program be set up for that particular state. Thus, the major thrust of the legislation would be nullified by its very provisions.

This undesirable result can be avoided, however, through the elimination of the moratorium section, and, the substitution therefore, of a new section which would provide for the issuance of interim permits by an existing state regulatory authority beginning on the date of enactment and going until the end of the 24th calendar month following the date of enactment. Conceptually, the permits would be issued under the federal law and would remain valid until the end of the 24th month is reached or until a state program has been approved by the Secretary of Interior. By

eliminating this unnecessary moratorium section, and by substituting an interim permit section, the pressure for federal intervention is considerably reduced.

Mr. Chairman, moving on now to other sections of S. 425, I would note Section 208 (b) dealing with performance bonds. S. 425 commendably recognizes that a mining operator should put up a performance bond guaranteeing that he will faithfully comply with the requirements of the federal law. However, I believe that nowhere in Section 208 (b) dealing with performance bonds does it state the exact area which would be covered by the performance bond. This is significant because many operations contain several hundred acres of land that will be affected by the surface mining operation. But, in fact, mining only takes place on a rather limited amount of acreage within that area of land affected. The act should spell out clearly what area is to be covered by the performance bond.

The most important sections of any surface mining regulatory bill are those sections dealing with the conduct of surface mining and reclamation operations. Section 212 of S. 425 sets forth the regulations with which each permittee is required to comply. However, S. 425 fails to recognize that improved mining technology has developed a new method of mining, referred to as the modified block cut method of mining, which virtually eliminates the necessity of leaving highwalls at the end of the mining operation. Since Section 212 (b) (2) allows for the existence of highwalls at the end of the operation, it is, therefore, objectionable. As Deputy

Secretary Walter Heine testified, Pennsylvania has not allowed a highwall to exist at the end of a mining operation since 1964.

S. 425 commendably recognizes that there are certain kinds of mining operations which are more like deep open pits than shallow surface excavations. However, it is difficult to conceive of the particular kinds of mining operations which would qualify as large open pit mines under Section 212 (c) because of the ambiguity of the wording of numbers 3 and 4 under this section. In addition, the reclamation standards for large open pit mines are vague and unsatisfactory. With careful draftsmanship, however, I am confident that these problems can be rectified.

Mr. Chairman, one of the most important concepts that this Committee must deal with in the drafting of surface mining legislation is the protection of the rights of the surface owner vis-a-vis, those of the subsurface mineral owner. Section 410 of S. 425 purports to deal with this very difficult problem by requiring that the surface mining operator's application for a permit include either the written consent of, or the waiver by, the owners or owners of the surface lands involved or the execution by the operator of a bond payable to the surface owner in the event that the surface is damaged by the surface mining operation. This either/or concept, it seems to me, is totally unacceptable. It will perpetuate the incredible hardship and heartbreak of the infamous "broad form" deed. I'm sure this Committee is aware of the inequities created by certain state courts' (Kentucky, for example) interpretation of this deed.

It seems to me that constitutionally the surface owner who pays taxes on the surface of his land, who develops it over a period of years and perhaps nutures it through farming, or grazes his animals on it, or manages a stand of timber on it, it seems to me his rights are superior to those of the subsurface mineral owner who has acquired perhaps only a right to merely mine the mineral underneath that surface. While I am no expert in constitutional law, nonetheless, it seems to me that it is offensive to common decency and common sense that the subsurface mineral owner could come on to someone's property and dig up and destroy his surface without the consent of or waiver by the surface owner.

But, on the other hand I am not at all sure that it is constitutionally permissable for the federal government to pass a law which would interfere with the contractual relationships that have grown up between the surface owner and the subsurface mineral owner over a period of years through various deeds and exceptions and reservations within those deeds. What may be constitutionally proper would be for the Congress to direct no one but its federal agencies to do certain things. I would submit, therefore, that in those instances where the federal government owns the subsurface minerals but not the surface of the land, that the federal government be instructed by legislation not to dispose of such minerals under such lands unless the federal government has first obtained the written consent of the appropriate surface land owners to the present or future extraction of such minerals by means of surface mining. In addition, I believe it is perfectly proper for Congress to instruct any federal department, agency, or authority that it

shall not purchase or otherwise obtain any coal from any supplier which coal has been extracted by means of surface mining on lands owned by any person who has not given his written consent to the extraction of such coal by surface mining.

Mr. Chairman, I want to thank the members of this Committee for granting me this opportunity to appear before them today to present my views on surface mining legislation pending before this Congress. Thank you very much.

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Senator METCALF. I understand that the next six witnesses will appear as a panel. Is that correct?

Mr. PICKELNER. Yes, sir.

Senator METCALF. Mr. Joel Pickelner, the conservation counsel of the National Wildlife Federation, Mr. Peter Borrelli of the Sierra Club, Mr. John Franson of the National Audubon Society, Ms. Nancy Matisoff from the Izaak Walton League and Mr. Richard Pardo of the American Forestry Association, a rather prestigious and formidable group of representatives of some of the most outstanding conservation organizations in America.

Who is going to be chairman?

Mr. PICKELNER. Mr. Chairman, I will be chairman right now, but we would like to change the order of the list a little bit, if we can.

I am Joel Pickelner of the National Wildlife Federation——

Senator METCALF. You will be chairman, and the whole thing is in your hands from now on.

Mr. PICKELNER. We would like to lead off with Ms. Louise Dunlap of the Environmental Policy Center, and then pick up the rest of the witness list as it is now.

Senator METCALF. Will you identify your colleagues so the reporter can get them and so that we can keep track of where you all are?

Mr. PICKELNER. On my far left is Louise Dunlap of the Environmental Policy Center. Next to her is Nancy Matisoff of the Izaak Walton League. Next, is Peter Borrelli of the Sierra Club. Next, is John Franson of the National Audubon Society. I am Joel Pickelner, and Richard Pardo of American Forestry.

Senator MCCLURE. Mr. Chairman, I wonder if we might interrupt for just a moment here because I am very pleased to see that women's lib has become so effective that our good friend, Louise, will lead off today.

Senator METCALF. Do you want to present a series of statements starting off with Louise Dunlap, or do you want to have each individual statement and then have interrogation after each witness?

Mr. PICKELNER. I think it would be best, Mr. Chairman, to have each one give their statement and then questions.

Senator METCALF. OK. Now, you are in the driver's seat; you are in charge and you start calling your witnesses.

Mr. PICKELNER. OK. Louise Dunlap of the Environmental Policy Center.

STATEMENT OF MS. LOUISE DUNLAP, ENVIRONMENTAL POLICY CENTER

Ms. DUNLAP. Thank you.

I will, at this time, submit for the record the information of the members of the committee a compilation of deep and strippable resource, figures by John McCormick of the Environmental Policy Center. These figures are all based on Bureau of Mines, Council on Environmental Quality, National Coal Association and Environmental Protection Agency data.

At this time, I will condense my remarks to save some time, and within the week the Center will submit to the committee a detailed critique of S. 425 and S. 923 with suggested amendments.

Senator METCALF. Thank you very much, and your material will be incorporated in the record immediately after your statement.

Ms. DUNLAP. Thank you.

Mr. Chairman and members of the committee, since this committee last held hearings on surface mining legislation in February 1972, an additional approximate 260,400 acres have been damaged by surface mining at an estimated rate of 4,650 acres per week, according to the Council on Environmental Quality.

There is no question that the surface mining of minerals other than coal, constitutes serious human and environmental problems. But, the recent and dramatic escalation within the coal industry from deep mining to surface mining and from eastern to western coal fields has catapulted the issue of surface mining of all minerals into a major national debate.

A public policy which suggests a phaseout of surface coal mining need not ignore the adverse environmental effects inherent in the surface mining of other minerals. But, it is not unreasonable to suggest that a public policy could be adopted by this Congress which recognizes the existence and availability of deep mine coal reserves, particularly those which are low in sulfur content.

Contrary to the coal industry's campaign of "manifest destiny" which claims that the only deposits of low-sulfur coal are located in the West and that they must be extracted by strip mining the industry's own figures undermine this seeming inevitability. This campaign promoting the inevitability of western strip mining is documented in coal industry testimony before the Senate Public Works Committee in the last Congress.

Senator METCALF. Yesterday they testified to that effect, also.

Ms. DUNLAP. The industry's own figures undermine this seeming inevitability.

The Bureau of Mines and National Coal Association data confirm that the ratio of total U.S. coal reserves, deep to strip, is an 8 to 1 ratio, and that assumes present economic conditions and no new technological developments.

The ratio of low-sulfur deep coal reserves to low-sulfur strippable reserves in the United States is a 7 to 1 ratio. In Appalachia, the ratio of low-sulfur deep coal reserves to low-sulfur strippable reserves is a 10 to 1 ratio. In the Western States, the ratio is 7 to 1.

In fact, 16 of the 34 coal-producing States have substantially greater low-sulfur deep, recoverable coal reserves than low-sulfur reserves recoverable by strip mining. In Colorado, this ration is 42 to 1. In Montana, the ratio of low-sulfur deep to strip is 8 to 1. In New Mexico, the ratio is 5 to 1. In Utah, the ratio is 921 to 1. And, in the Nation's No. 1 and No. 2 coal-producing States, Kentucky and West Virginia respectively, the ratio of low-sulfur deep coal reserves to low-sulfur strippable coal reserves is 9 to 1.

It must also be recognized that in the absence of public policy which establishes as a national priority, the extraction of low-sulfur deep coal reserves over strippable coal reserves, and that in the absence of stringent Federal regulatory legislation which will more equitably internalize the unaccounted costs of surface mining, the increasing economic competitive disadvantage of deep coal mining in relation to surface coal mining will insure the paralysis of the deep mine coal industry, particularly in Appalachia.

While the center will submit a detailed critique of S. 425 and S. 923, with suggested amendments within the next few days, several comments are appropriate at this time.

There has been a great deal of rhetoric on the part of the industry that where the land cannot be reclaimed then strip mining should not be permitted. Yet, in the 92d Congress, and at this early date in the 93d Congress, it is evident that the mining industry remains highly resistant to any legislation which includes specificity.

While it is argued by the industry that specificity in Federal criteria in "punitive" or "arbitrary" rather than "corrective" due to "the diversity of terrain, climate, biologic, chemical, and other physical conditions," it may also be argued that detail in the criteria facilitate the promulgation of Federal regulations and the development of State programs. This has certainly been the case in Pennsylvania, which has the Nation's most stringent State regulatory law and a vigorous enforcement program, and I believe this week you received details from the Pennsylvania Department of Environmental Resources about that.

Specificity of criteria need not dictate a particular mining method. Rather, such detail is intended to establish thresholds of acceptability for land use and protection during the mining and reclamation processes.

Regardless of the diversity of terrain, certain performance standards should apply which can be achieved by the operator through his choice of mining and reclamation methods so long as certain required conditions of the land affected are maintained during and after his operation.

I will terminate here, and I hope that you will include the rest of my testimony in the record.

Senator METCALF. Without objection, it is so ordered, and thank you very much.

[The complete statement of Ms. Dunlap and attachment follow:]

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STATEMENT BEFORE THE SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE
BY LOUISE DUNLAP, WASHINGTON REPRESENTATIVE, ENVIRONMENTAL POLICY CENTER

Mr. Chairman and members of the Committee, I am Louise Dunlap, Washington Representative of the Environmental Policy Center. I appreciate this opportunity to comment on legislation before your Committee. Since this Committee last held hearings on surface mining legislation in February 1972, an additional approximate 260,400 acres have been damaged by surface mining at an estimated rate of 4,650 acres per week according to the Council on Environmental Quality.

There is no question that the surface mining of minerals other than coal constitutes serious human and environmental problems. But, the recent and dramatic escalation within the coal industry from deep mining to surface mining and from eastern to western coal fields has catapulted the issue of surface mining of all minerals into a major national debate. A public policy which suggests a phase-out of surface coal mining need not ignore the adverse environmental effects inherent in the surface mining of other minerals. But, it is not unreasonable to suggest that a public policy could be adopted by this Congress which recognizes the existence and availability of deep mine coal reserves, particularly those which are low in sulphur content.

Contrary to the coal industry's campaign of "Manifest Destiny" which claims that the only deposits of low sulphur coal are located in the West

and that they must be extracted by strip mining, the industry's own figures undermine this seeming inevitability. Bureau of Mines and National Coal Association data confirm that the ratio of total U.S. coal reserves, deep to strip, is an 8 to 1 ratio, assuming present economic conditions and no new technological developments. The ratio of low sulphur deep coal reserves to low sulphur strippable reserves in the U.S. is a 7 to 1 ratio. In Appalachia, the ratio of low sulphur deep coal reserves to low sulphur strippable reserves is a 10 to 1 ratio. In the western states the ratio is 7 to 1. In fact, sixteen of the thirty-four coal producing states have substantially greater low sulphur deep recoverable reserves than low sulphur reserves recoverable by strip mining. In Colorado, this ratio is 42 to 1. In Montana, the ratio of low sulphur deep to strip is 8 to 1. In New Mexico the ratio is 5 to 1. In Utah, the ratio is 921 to 1. And in the nation's number one and number two coal producing states, Kentucky and West Virginia respectively, the ratio of low sulphur deep coal reserves to low sulphur strippable coal reserves is 9 to 1.

It must also be recognized that in the absence of public policy which establishes as a national priority, the extraction of low sulphur deep coal reserves over strippable coal reserves, and that in the absence of stringent Federal regulatory legislation which will more equitably internalize the unaccounted costs of surface mining, the increasing economic competitive disadvantage of deep coal mining in relation to surface coal mining will insure the paralysis of the deep mine coal industry, particularly in Appalachia.

While the Center will submit a detailed critique of S. 425 and S. 923, with suggested amendments within the next few days, several comments are appropriate at this time. There has been a great deal of rhetoric on the part of the industry that where the land cannot be reclaimed then strip mining should not be permitted. Yet, in the 92nd Congress and at this early date in the 93rd Congress it is evident that the mining industry remains highly resistant to any legislation which includes specificity. While it is argued by the industry that specificity in Federal criteria is "punitive" or "arbitrary" rather than "corrective" due to "the diversity of terrain, climate, biologic, chemical, and other physical conditions," it may also be argued that detail in the criteria facilitate the promulgation of Federal regulations and the development of State Programs. This has certainly been the case in Pennsylvania which has the nation's most stringent state regulatory law and a vigorous enforcement program.

Specificity of criteria need not dictate a particular mining method. Rather such detail is intended to establish thresholds of acceptability for land use and protection during the mining and reclamation processes. Regardless of the diversity of terrain certain performance standards should apply which can be achieved by the operator through his choice of mining and reclamation methods so long as certain required conditions of the land affected are maintained during and after his operation.

Such Federal criteria for surface mining and reclamation operations should include as minimum requirements among other things that the operator: (1) remove, segregate and preserve topsoil, covering it with quick-growing ground cover and maintaining a successful cover thereafter to avoid wind and water erosion; (2) remove, segregate, and protect spoil materials to prevent wind and water erosion until backfilling; (3) stabilize all soil, subsoil, spoil, water and refuse piles to prevent sliding by, where applicable, layering, compacting, imposing slope and height limitations and by establishing,

where possible, vegetative cover; (4) insure that when performing surface mining on natural slopes in excess of 14 degrees from the horizontal that no overburden or debris be placed over the bench unless the applicant can affirmatively demonstrate that the proposed mining method will effectively prevent sedimentation, landslides, erosion, or acid, toxic or mineralized water pollution and that such areas can be reclaimed as required by the Act; (5) backfill, compact (where advisable), and regrade the area of land affected so that it is restored to its approximate original contour with all highwalls, spoil piles, and depressions to hold water eliminated, with other provisions including terracing only when the regulatory authority finds that the reasons advanced are satisfactory and that the natural slope or contour of the area to be affected is less than 14 degrees; (6) plant on all affected lands a stable and self-regenerating vegetative cover approved by the regulatory authority, which, where advisable, shall be native vegetation with the operator maintaining such planting for a period of five years after the termination, for any reason, of the operation; (7) maintain the quality of water in surface and subsurface water systems both during and after surface mining and reclamation operations in accordance with the highest applicable water quality standards, with specific methods prescribed in the criteria and by the regulatory authority; (8) insure that water impoundments are properly designed and maintained during the mining operation so as to prevent siltation, water pollution, ruptures during intense storms; (9) insure protection of offsite areas from slides or damage with no waste accumulations located outside the approved permit area; (10) insure that explosives are used only in accordance with existing State and Federal law and that blasting schedules be posted with advance written notice to local governments and residents; (11) remove and otherwise dispose of all debris, structures, facilities, and equipment upon the approval of the performance

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bond release; (12) segregate acid-forming or toxic materials uncovered during excavation and promptly bury, cover, and compact or otherwise treat such materials during the mining cycle; (13) insure that all debris and acid-forming or toxic materials are treated, compacted, and buried promptly as part of the mining cycle; (14) restore the land affected to a condition at least fully capable of supporting the uses which it was capable of supporting prior to any mining, provided that the operator's proposed land use following the the reclamation is not deemed to be impractical or unreasonable, or inconsistent with applicable land use policies and plans; (15) obtain the written consent of the surface landowners, if different from the applicant; (16) limit the amount of surface excavated at any one time in conformity with the approved Reclamation Plan; (17) minimize re-affecting the land in the future by recovering all mineral resources that can be technologically and economically extracted on the land to be affected.

We urge that legislation reported out of this Committee, contain, as a minimum, these criteria.

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Prepared for the Senate Interior and Insular Affairs Committee

by John L. McCormick, Washington Representative, Environmental Policy Center

March 15, 1973.

Source: Bureau of Mines, Council on Environmental Quality, National Coal Association, Environmental Protection Agency.

RESOURCES IN THE U.S.

(figures do not consider whether the coal can be mined economically)

Total coal resources in the ground 0 - 6,000 feet.	3.2 trillion tons
coal resources in the ground 3 - 6,000 feet.	.33 trillion tons
coal resources in the ground 0 - 3,000 feet.	2.9 trillion tons

RESERVES IN THE U.S.

(Overburden to 3,000 feet; determined by mapping and exploration)

Total coal reserves in the ground 0 - 3,000 feet.	1.5 trillion tons
Bituminous coal reserves in the ground	671 billion tons
Subbituminous coal reserves in the ground	428 billion tons
Lignite coal reserves in the ground	447 billion tons
Anthracite coal reserves in the ground	13 billion tons

STRIPPABLE RESOURCES IN THE U.S.

(Strippable resource figures do not consider whether coal can be mined economically)

Bituminous coal strippable resources	62.8 billion tons
Subbituminous coal strippable resources	40.3 billion tons
Lignite coal strippable resources	16.0 billion tons
Total strippable resources in U.S.	117.9 billion tons

STRIPPABLE RESERVES IN THE U.S.

(That part of the strippable resource that can be mined economically with existing technology)

Bituminous coal strippable reserves	13.6 billion tons
Subbituminous coal strippable reserves	24.3 billion tons
Lignite coal strippable reserves	7.1 billion tons
Total strippable coal reserves in U.S.	45 billion tons

DEEP MINE RESERVES IN THE U.S.

Bitumminous and Lignite in the East	113 billion tons
Bituminous and Lignite in the West	242 billion tons
Bituminous and Lignite U.S. total	355 billion tons
Bituminous and Lignite in Appalachia	67.6 billion tons

LOW SULPHUR STRIPPABLE RESERVES (LESS THAN 1%) IN THE U.S.

Bituminous low sulphur coal reserves	2.8 billion tons
Subbituminous low sulphur coal reserves	23.5 billion tons
Lignite low sulphur strippable reserves	5.4 billion tons
Total low sulphur strippable reserves in U.S.	31.7 billion tons

LOW SULPHUR DEEP MINE RESERVES (LESS THAN 1%) IN THE U.S.

Bituminous and lignite in the East	18 billion tons
Bituminous and Lignite in the West	203 billion tons
Bituminous and Lignite U.S. total	221 billion tons
Bituminous and Lignite in Appalachia	18 billion tons

RATIO DEEP MINE RESERVES TO STRIPPABLE RESERVES IN THE U.S.

Ratio deep to strip in U.S. total Bituminous and Lignite reserves

Deep Reserves	355 billion tons
Strippable reserves	45 billion tons
Ratio, deep to strip, total U.S. reserves	8 to 1 ratio

RATIO LOW SULPHUR DEEP TO LOW SULPHUR STRIP IN THE U.S.

Ratio deep to strip (less than 1%) Bituminous and Lignite reserves U.S. total

Deep reserves	221 billion tons
Strippable reserves	31 billion tons
Ratio, deep to strip, total low sulphur U.S.	7 to 1 ratio

Appalachian Reserves

Deep mine reserves	67.6 billion tons
Strippable Reserves	6.1 billion tons
Total reserves in Appalachia	73.6 billion tons

APPALACHIAN LOW SULPHUR (LESS THAN 1%) RESERVES

Deep mine reserves	18 billion tons
Strippable reserves	1.8 billion tons
Total low sulphur reserves	19.8 billion tons
Ratio, deep to strip, low sulphur, Appalachia	10 to 1 ratio

RATIO LOW SULPHUR DEEP TO LOW SULPHUR STRIP RESERVES IN THE WEST

Deep reserves in the West (low sulphur)	203 billion tons
Strippable Reserves in the West (low sulphur)	29 billion tons
Ratio, deep low sulphur to strippable low sulphur	7 to 1

UNDERGROUND MINE DATA

NUMBER OF MINES, PRODUCTION, EMPLOYMENT, AVERAGE COST/TON, ETC.

Number of deep mines in U.S., 1966	4,741
Number of deep mines in U.S., 1971	2,268
Number of deep mine closures between 66 - 71	2,473
Number of surface mines in U.S., 1966	1,572
Number of surface mines in U.S., 1971	2,268
Number of surface mine increase between 66 - 71	696
Deep mine production in U.S., 1966	338.5 million tons
Deep mine production in U.S., 1971	275.9 million tons
Loss in production between 1966 - 1971	62.6 million tons
Surface Mine production in U.S., 1966	180 million tons
Surface mine production in U.S., 1971	259 million tons
Increase in production between 1966 - 1971	79 million tons
Employment in deep mines in U.S., 1960	142,093
Employment in deep mines in U.S., 1970	107,808
Reduction in employment between 1960 - 1970	34,285
Employment in surface mines in U.S., 1960	25,161
Employment in surface mines in U.S., 1970	28,395
Increase in surface mine employment 1960 - 1970	3,234
Bituminous coal $/ton, U.S. average 1960	$4.69
Bituminous coal $/ton, U.S. average 1971	$7.07
Production from captive mines, U.S., 1971	
Steel	53.5 million tons
Elec. utilities	12.7 million tons
Other	7.7 million tons
Total captive mine, U.S. production	73.9 million tons
Percent of total U.S. production	13.4% of 1971 U.S. total

DATA PERTAINING TO APPALACHIAN DEEP AND STRIP PRODUCTION AND RESERVES, 1971

Production by surface mining as a function of slope, in Appalachia

0 - 10°	22.13 million tons - 22.13% of strip total
10 - 15°	25.34 million tons - 16.3% of strip total
15 - 20°	28.30 million tons - 18.2% of strip total
20 - 25°	28.20 million tons - 18.1% of strip total
25° +	51.95 million tons - 33.3% of strip total
Total Appalachia strip	155.79 million tons -100.0%

Appalachian underground production	219 million tons - 80% of U.S. total
Appalachian strip and auger	155 million tons - 56% of U.S. total
Total Appalachian coal production	374 million tons - 68% of U.S. total

Strippable reserves in Appalachia as a function of slope

0 - 10°	2.7 billion tons - 42% of App. strip reserves
10 - 15°	1.1 billion tons - 17% of App. strip reserves
15 - 20°	.8 billion tons - 12% of App. strip reserves
20 - 25°	1.0 billion tons - 15% of App. strip reserves
25° +	.9 billion tons - 14% of App. strip reserves
Total	6.4 billion tons

Exports of Bituminous Coal

Total U.S. exports of Bituminous Coal, 1971 56,632,986 tons

PRICES OF COAL BY REGION OF PRODUCTION ref. C.E.Q. Slope Limitation Study

Low Sulphur Steam Electric Coal	Surface	Deep
North Appalachia	$8.90	$15.01
Central Appalachia	$9.90	$10.63
South Appalachia	$7.54	$9.85
Average for Appalachia	$9.45	$10.80
Average for Nation	$7.69	$10.61

All Steam Electric Coal	Surface	Deep
North Appalachia	$8.93	$9.29
Central Appalachia	$9.51	$10.23
South Appalachia	$8.07	$10.30
Average for Appalachia	$9.04	$9.75

50 Biggest Bituminous Mines in 1971

Total Production, 50 Mines	125,835,995 tons
U.S. Total Production (bitum.-Lignite)	552,192,000 tons
Percent Mines to National Total	22.8%

Mr. PICKELNER. Mr. Chairman, I will go next.

STATEMENT OF JOEL M. PICKELNER, CONSERVATION COUNSEL, NATIONAL WILDLIFE FEDERATION

Mr. PICKELNER. My name is Joel M. Pickelner, and I am the Conservation Counsel for the National Wildlife Federation.

My statement will be brief, in deference to the long list of witnesses here to testify. In the statement, I tried to cite the National Wilflife Federation's objections to the administration's bill, and list those features which we consider essential to a strong, Federal regulatory bill.

I am sure the members of this committee here are concerned about the problems created by surface mining and the need for a Federal bill to control all surface mining industries. So, I will not address this issue from that standpoint.

Mr. Chairman, the administration is aware of the adverse effects to the environment caused by strip mining, and sets forth in section 102 of its bill, many of these damaging effects and specifies as the purpose of the bill, "to encourage a nationwide effort to regulate mining operations to prevent, or substantially reduce their environmental effects."

The National Wildlife Federation strongly urges the committee to report out a bill which will do more than "substantially reduce these environmental effects." Rather, it should require that each operation be sufficiently managed so as to control all erosion, sedimentation and flooding, and limit all adverse effects to the area under permit and return such area to a condition equal or superior to its condition prior to mining. If it were the intent just to substantially reduce the environmental effects of strip mining, it would not be worth the effort to enforce such a bill.

S. 923 does not provide for public participation in the Department of the Interior's review and approval or disapproval of the proposed State regulations. This is one instance where public participation is a necessity and the right of interested persons in the States to make comment as to how the mining in the States shall be regulated, must not be denied them.

It provides that State regulations must require ongoing mining operations to obtain permits within 1-year after the regulations are approved. However, each permit may allow the operator up to 2 years from the opproval date to come into compliance with the performance standards and up to 5 years for small operations.

It is not inconceivable to imagine that every operator, large or small, could give a 100 reasons why his noncompliance should be extended. The short-term effects of this provision will be a tremendous increase in surface mining activity especially in the West.

The administration's bill requires the Secretary to consider, in addition to the relative degrees of environmental protection, the cost of reclamation relative to the market value of the land.

If the reclamation operation is estimated to cost upwards of $1,000 an acre, due to severe soil or acid problems or other conditions, and the current market value of the land prior to mining is only $35 an acre,

and this is true in some of the eastern portions of your own State, the administration's bill allows the operators to consider the relative economic costs of reclamation, thus limiting his actual reclamation expenses to the market value of the land affected by his mining operation.

It does not give the public the right to sue operators who are in violation of the regulations, nor does it allow for citizen suits against the Department of the Interior when it is found they are failing to perform non-discretionary acts. This type of provision is written into the Clean Air and Water Acts.

It does not provide for the restoration of abandoned lands previously strip mined, which are provided for in both H.R. 3 and S. 425, through an abandoned mined land reclamation fund.

This is a critical need if most of the Appalachian States where more than half of the land stripped remains in the same condition as the last day it was mined. It is simply not acceptable to conclude that continuing pollution and environmental degradation from past mining can be condoned or ignored, as recommended by the industry.

The strict performance standards, called for in President Nixon's environmental message to Congress, are nowhere to be found in S. 923. Instead, it directs the Secretary of the Interior to promulgate within 6 months after enactment, performance standards for the reclamation of surface and open pit mining, and up to 1-year to adopt such standards for underground operations.

This provision gives the Secretary the discretion of determining these performance standards without giving the public an opportunity to comment and object to any of the regulations.

The next two pages of my statement contain certain standards, which I will not read. I hope they will be contained in the record.

Finally, it is our hope, Mr. Chairman, that the bill which is eventually signed into law will have incorporated into it all of the minimum provisions I have set forth in my written statement.

We feel that a strip mining regulatory procedure is vital and long overdue. Each day's delay condemns more access to the strip miner's shovel. The law that you enact must be strong and have adequate enforcement provisions.

The National Wildlife Federation's concern with the environmental damage that accompanies strip mining dates back many years. We have testified previously before Congress in favor of strong regulations to control strip mining, and in 1969, at our annual convention, the members of the federation tabbed strip mining as one of our major conservation issues.

The federation is now just beginning its 1973 annual meeting, and this weekend the membership will be asked to vote on a resolution dealing with surface mining.

I would like to ask the committee's permission to file a copy of this resolution after it is endorsed by the members of the federation.

Senator METCALF. We would be very pleased to have it.

Mr. PICKELNER. Thank you, Mr. Chairman. That concludes my statement.

[The prepared statement of Mr. Pickelner follows:]

STRIP MINING LEGISLATION

Statement of Joel M. Pickelner on behalf of the National Wildlife Federation before the Subcommittee on Minerals, Materials, and Fuels of the Senate Committee on Interior and Insular Affairs.

March 15, 1973

Mr. Chairman, I am Joel M. Pickelner, Conservation Counsel for the National Wildlife Federation, which has its national headquarters at 1412 Sixteenth Street, N.W., Washington, D.C.

Ours is a private organization which seeks to attain conservation goals through educational means. The National Wildlife Federation has Affiliates in all 50 States, Guam, Puerto Rico, and the Virgin Islands. These Affiliates, in turn, are made up of local groups and individuals who, when combined with associate members and other supporters of the National Wildlife Federation, number an estimated 3 and 1/2 million persons.

Mr. Chairman, my statement will be brief, in deference to the long list of witnesses who have yet to testify. It will site the National Wildlife Federation's objections to the Administration's bill and list those features we consider essential to a strong, federal regulatory bill. I am sure the members of this Committee share our concern for the problems created by surface mining and the need for a federal bill to control all surface mining industries, so I will not address this issue from that standpoint.

The Administration is aware of the adverse effects to the environment caused by strip mining and sets forth in Sec. 102, of its bill, many of these damaging effects and specifies as the purpose of the bill, "to encourage a nationwide effort to regulate mining operations to prevent, or substantially reduce their environmental effects". The National Wildlife Federation strongly urges the Committee to report out a bill which will do more than "substantially reduce these environmental effects". Rather, it should require that each operation be

sufficiently managed so as to control all erosion, sedementation and flooding and limit all adverse effects to the area under permit and return such area to a condition equal or superior to its condition prior to mining. If it were the intent just to substantially reduce the environmental effects of strip mining, it would not be worth the effort to enforce such a bill.

S.923 does not provide for public participation in the Department of the Interior's review and approval or disapproval of the proposed State Regulations. This is one instance where public participation is a necessity and the right of interested persons in the States to make comment as to how the mining in their states shall be regulated, must not be denied them.

It provides that state regulations must require on-going mining operations to obtain permits within one year after the regulations are approved. However, each permit may allow the operator up to 2 years from the approval date to come into compliance with the performance standards and up to 5 years for small operations. It is not inconceivable to imagine that every operator, large or small, could give a hundred reasons why his non-compliance should be extended. The short term effects of this provision will be a tremendous increase in surface mining activity especially in the west.

The Administration's bill requires the Secretary to consider, in addition to the relative degrees of environmental protection, the cost of reclamation relative to the market value of the land. If the reclamation operation is estimated to cost upwards of $1,000 an acre, due to severe soil or acid problems or other conditions and the current market value of the land prior to mining is only $35 an acre, the Administration's bill allows the operators to consider the relative economic costs of reclamation, thus limiting his actual recla-

mation expenses to the market value of the land affected by his mining operation.

It does not give the public the right to sue operators who are in violation of the regulations, nor does it allow for citizen suits against the Department of the Interior when it is found they are failing to perform non-discretionary acts. This type of provision is written into the Clean Air and Water acts.

It does not provide for the restoration of abandoned lands previously strip mined, which are provided for in both H.R.3 and S.425, through an abandoned Mined Land Reclamation Fund. This is a critical need if most of the Appalachain states where more than half of the land stripped remains in the same condition as the last day it was mined. It is simply not acceptable to conclude that continuing pollution and environmental degradation from past mining can be condoned or ignored as recommended by the industry.

The strict performance standards, called for in President Nixon's environmental message to Congress, are nowhere to be found in S.923. Instead, it directs the Secretary of the Interior to promulgate within 6 months after enactment, performance standards for the reclamation of surface and open pit mining and up to 1 year to adopt such standards for underground operations. This provision gives the Secretary the discretion of determining these performance standards without giving the public an opportunity to comment and object to any of the regulations.

It is the position of the National Wildlife Federation that S.923 does not provide the kind of provisions and specific guidelines which are requisite to a strong regulatory bill. It also empowers the Department of the Interior with the authority to carry out the provisions in the Act. There is some doubt as to the capability of Interior to administer this program. In August of last year and in January of

this year, the G.A.O. reported to the House Conservation and Natural Resources Subcommittee that the Interior Department has failed to properly and effectively administer and enforce these regulations in order to protect our environment. On the basis of this report, it is clear that Interior is not anxious to regulate the mining industry in such a way as to insure that the public's interest in environmental protection will receive the attention it deserves. The agency responsible for enforcement must be willing to act vigorously in enforcing this Act.

A Federal surface mining law must be specific in setting forth requirements which the mining and reclamation operations must meet. Without specific performance standards, set forth in the law, rather than at the discretion of an administering agency, the mining industry as well as the public will be in doubt as to what is expected of the mining and reclamation operations. The following are minimum standards that any regulatory bill must have if it is to insure adequate protection for the land and the safety of the public:

--an interim permit system must be established in lieu of promulgation and enforcement of rules and regulations, in order that operators can immediately come under the requirements of the Federal law;

--state administration and enforcement with the Federal agency overseeing and periodically reviewing the state's efforts;

--obtaining written consent from the surface owner before mining commences;

--recognition of the special problems in the west, with regards to the arid conditions and the need for stable groundcover;

--a program, carried on in each state to inventory the land and designate those areas which are unsuitable for mining, because of environmental or other reasons and to prohibit mining on such lands;

--provide for cease and desist orders, suspension of permits and revocation of permits;

--require compliance with state and federal air and water pollution laws;

--provide the right for citizens to sue operators who are in violation of the law and the administrator of the law if he fails to carry out the enforcement of the provisions in the Act;

--public hearings prior to promulgation of rules and regulations, and approval of state programs by the regulatory authority;

--public hearings prior to the granting or denying of operating permits, bond release, and the designation of lands unsuitable for mining.

There must also be specific performance standards written into the bill, among those standards the National Wildlife Federation feels are most important are:

--removal and segregation of topsoil, to be returned as top soil as a part of the reclamation operation;

--elimination of highwalls and water impoundments where possible;

--backfill and grade to approximate the original contour of all surface and contour mining operations;

--prohibit the permanent placement of spoils on slopes greater than 14°;

--plant a stable and self-regenerating groundcover and whenever possible, use a native species of groundcover;

--maintain flood control facilities during and immediately after the mining and reclamation operation

--prevent erosion and siltation into any stream, river or body of water;

--segregate acid-forming materials and bury such material promptly

or otherwise treat the toxic materials during the mining operation in such a manner that they will not contaminate off-site areas;

--insure that explosives are used only in accordance with existing State law and when the public in the immediate area have been given sufficient notice prior to blasting.

Mr. Chairman, it is our hope that the bill which is eventually signed into law will have incorporated in it all of the minimum provisions I have set forth. We feel that a strip mining regulatory procedure is vital and long overdue. Each day's delay condemns more acres to the strip miners shovel. The law that you enact must be strong and have adequate enforcement provisions.

The National Wildlife Federation's concern with the environmental damage that accompanies strip mining dates back many years. We have testified previously before Congress in favor of strong regulations to control strip mining and in 1969, at our annual convention, the members of the Federation tabbed strip mining as one of our major conservation issues. The Federation is now just beginning its 1973 Annual Meeting and this weekend the membership will be asked to vote on a resolution dealing with surface mining. I would like to ask the Committee's permission to file a copy of this resolution after it is endorsed by the members of the Federation.

Over the past twenty years a number of pieces of important legislation concerning strip mining have been considered, but no final action was taken. During those same twenty years strip mining has grown unregulated at a frightening pace. For this reason, Mr. Chairman, the National Wildlife Federation feels that strong laws regulating strip mining must be enacted without delay.

Thank you for the invitation and opportunity of making these remarks.

Mr. PICKELNER. Mr. Peter Borrelli is next.
Senator METCALF. Mr. Borrelli.

STATEMENT OF PETER R. BORRELLI, EASTERN REPRESENTATIVE, SIERRA CLUB

Mr. BORRELLI. Thank you, Mr. Chairman.

You have before you a 22 page statement, representing the current views of the Sierra Club on the legislation pending. I will spare the committee and the audience a verbatim reading of this testimony, and instead will summarize.

Senator METCALF. Mr. Borrelli, I hesitate to thank you and tell you to summarize, because during the course of these hearings we have received exhaustive and lengthy statements, and when I tell them to summarize, they just ad lib and read the statement in its entirety. So, I will be delighted to have you put it in the record.

Mr. BORRELLI. Mr. Chairman, the Sierra Club has been directly concerned with strip mining for many years. Its members throughout many of the Eastern States and elsewhere where strip mining has been extensive have borne witness to the uncontrolled spread of this mining technique.

Through their elected officials and the courts they have joined with other citizens of these States in numerous attempts to curb the abuses of strip mining. In recent years and months, they have worked in coalition with others to amend the laws in Pennsylvania, Ohio, Kentucky, Tennessee, New Mexico, Wyoming, West Virginia, and Alabama. And one lesson has been universal; namely, the public has found that it has little control over strip mining.

The Sierra Club has also supported studies, books, and films, and encouraged others in research into this field. And, where necessary, we have pooled our resources and talent to test the laws.

In 1971, for example, we joined with the National Resources Defense Council and the Environmental Defense Fund in bringing suit against the Tennessee Valley Authority for its failure to adequately comply with the National Environmental Policy Act in matters relating to its purchase and use of strip mined coal.

TVA is the world's largest purchaser of strip mined coal. In 1971, the agency purchased 38 million tons of coal, 22 million tons of which came from strip mines.

Since that time, numerous other local citizens' groups have joined us in this important legal action.

Considering this interest and involvement, we especially appreciate this opportunity to testify before you. The testimony that follows first addresses the general policy questions relating to strip mining, especially for coal, and, second, analyzes S. 425.

The comments relating to 425 equally apply to S. 923.

I would now like to summarize for the committee the general policy matter and some of our general findings.

Senator METCALF. What is Senator Case's legislation? What number is that?

Mr. BORRELLI. That was introduced earlier this week.

Senator METCALF. You mentioned it in your testimony.

Mr. BORRELLI. Yes. It did not have a number as of Wednesday of this week.

Senator METCALF. It will also be included in the record of the hearings.

Mr. BORRELLI Thank you.

The public's experience with strip mining has made it plain that the present way we gouge the land for coal is an enterprise that is beyond effective public control. Most States, even those with relatively strong regulations, have not begun to substitute a sense of the total public interest for the will of the private and enormously powerful coal companies.

The public is without a voice in controlling strip mining. The Federal Government has no regulatory program, although some weak versions are under congressional consideration. Moreover, the Government itself, through the coal purchases of the Tennessee Valley Authority and through the leasing practices of the Interior Department is actually spreading and increasing strip mining.

The web of energy policies that directly affects coal markets is a tool of convenience for the energy companies, not a coherent policy designed to produce power at reasonable and equitable cost.

It is not illogical, in the face of this absence of any rein on the coal companies, to ask that strip mining be stopped now. Perhaps not stopped for all time and in all places, but stopped until we can create even the most rudimentary means of making strip mine miners accountable to a broader public standard of care and caution.

Would anyone object if there were selected strip mining in nonmountainous areas consistent with a comprehensive land use plan, with provisions for the reconstruction of the wasted land? I think not.

But, we must face the fact that it is the companies, and not the Government nor the people, that now make the decisions affecting the land and the lives of Americans. Realistic State controls, like Pennsylvania's would offer an effective control mechanism, but it is virtually impossible to insulate the enforcement of such controls from local political and economic influence.

As a result, State controls are of necessity more prescriptive than preventive in nature. The damage is frequently done before the law is enacted. Federal reclamation laws would help—if they were enforced. It is not strip mining, as such, that is so objectionable, it is the way it is done and the way in which decisions are made about how and where it will be done that is the major cause of concern.

In recent years, industry apologists have pointed to the relatively successful experience of West Germany and Great Britain to justify the continuation of strip mining in this country. They have also, I might add, pointed to various model reclamation projects throughout the country.

But, in making these comparisons, they have not noticed the fundamental difference between these nations' attitude toward the land and our own. The key to the West German and British experience in land restoration lies in meticulously detailed planning.

Aside from Pennsylvania's belated efforts, there is no American control comparable to the European systems. Even in the relatively advanced Pennsylvania arrangement, decisions are still left to individual

privately owned and privately controlled companies as to when and where to strip mine.

The State still exercises only partial control over the fate of its land. The regulatory efforts in other States are primitive in comparison to Pennsylvania's; set against the European model, they are primeval.

Summarizing briefly some of the basic specific positions taken by the Sierra Club with regard to the pending legislation, we have concluded that in the absence of adequate land use planning, a coordinated energy policy, stringent performance standards, strong enforcement, and more advanced technology can only lead to continued devastation in Appalachia and uncontrolled expansion of strip mining in the West.

Current technology is particularly inadequate to assure long term reclamation on steep slopes, slopes in excess of 20°, and in arid regions of the West, conclusions strongly supported by the recent report submitted to this committee by the Council on Environmental Quality.

Congress should establish a policy directing the Nation toward less exploitive means of mineral extraction than strip mining and take sufficient legislative action to achieve a gradual phaseout of strip mining for coal.

Sufficiently abundant low-sulfur underground coal reserves exist to justify greater selectivity in the location of mining and the means by which that coal is extracted.

No State presently has sufficiently stringent performance standards or enforcement, and in that we include the State of Pennsylvania, and a clear need exists for strengthening individual State programs by means of a Federal regulatory program.

Experience suggests that the Department of Interior cannot balance its land management and development mission with an effective enforcement program. Of the existing line agencies, only EPA has sufficient enforcement experience to administer such a program. At the very least, any congressional action should require EPA concurrence.

Senator METCALF. Senator Baker, however, yesterday introduced a bill, 1163, which would put the enforcement in the EPA.

Mr. BORRELLI. I am aware of that, Mr. Chairman. I am not sure whether that was the bill prepared by EPA, although it does have that provision.

Senator METCALF. Anyway, the question of which agency should be the administrative one is formally before the committee.

Senator HANSEN. Mr. Chairman, if I could just ask one question.

On page 7, I am not sure if you may have read this, Mr. Borrelli, but on page 7 of your printed statement, in the middle of the paragraph, I find these words, "And while the spectre of massive mining operations in that State," that's the State of Wyoming, "is becoming more and more of a reality, no action was taken."

Are you aware of the fact that the State of Wyoming passed a rather comprehensive law?

Mr. BORRELLI. Yes, Senator, I am.

Senator HANSEN. What does this statement mean?

Mr. BORRELLI. I apologize for the wording. I see now that that statement is in error. I have been referring to, in my original draft of this statement, to a piece of legislation——

Senator HANSEN. I raise the question because I hope that we don't have to check the credibility of the statements made. Senator Wallop is here and it surprises me that your statement would contain an error like that in it. I am just wondering if we need to check the rest of it to see if you are as inaccurate in the rest of the statement as you are in this instance.

Mr. BORRELLI. This committee has the privilege to check the rest of it.

If you will allow me, and I think Senator Wallop can further clarify this point, I had intended to refer to the piece of legislation that was introduced in the Wyoming legislature and supported by Senator Wallop.

In his testimony, he will specifically tell this committee what happened to that legislation and the degree to which the strong controls that it calls for were unsatisfactorily acted upon by that legislature.

Senator HANSEN. Mr. Chairman, I want to make a point. Let me read a little bit more of the statement. Here is the first sentence:

> The Wyoming Legislature, which meets for forty days every other year, has just adjourned after a bitter fight over strip mining. And while the spectre of massive mining operations in that state is becoming more and more of a reality, no action was taken.

I think each of us can make our own determination as to what that language means. It seems rather specific and precise to me. I must say that I note that with some sorrow because, although I may not agree with the Sierra Club on many things, I do agree with them on a number of things. I think that that sort of statement really requires a little more explanation than what we have had so far.

You may interpret this as being a law of little consequence, but my guess is that it is one of the better laws passed. I think it's about 101 pages long. I think Senator Wallop will address himself to its provisions and point out, as surely he will, some shortcomings and some disappointments as far as he is concerned.

But, it doesn't seem to me that the great amount of time that the Wyoming Legislature worked on this law merits this kind of treatment. Frankly, I am disappointed.

Mr. BORRELLI. I apologize to the committee and to Senator Hansen in particular. I will, for your edification and before the record closes, submit to the committee a detailed analysis of the Wyoming bill as it was passed.

Senator HANSEN. I don't think you need to do that. I think Senator Wallop is able to do that himself. If your analysis reflects the same lack of accuracy that this statement does, I don't know whether we could use it.

Senator METCALF. The witness, of course, is testifying on general legislation, and Senator Wallop is going to be here. He is going to testify.

Senator HANSEN. He is, sir?

Senator METCALF. Yes. He will testify this afternoon, and he will be the final authority on the Wyoming law, as the Governor of Montana is the final authority on the Montana law. I think all the members of this committee are perfectly competent and able to analyze the various propositions.

Mr. BORRELLI. I will be brief in my summary of my final remarks, Mr. Chairman.

We believe, with regard to the Federal regulatory program that we are calling for that it should include, at the very minimum, continuous monitoring, permit veto and Federal override authority, and should be administered along the lines of the national pollutant discharge elimination system, now administered by the Environmental Protection Agency.

Statutory performance standards should be as specific and as stringent as is possible to afford uniform and equitable administration of the law. Briefly, in that regard, we feel those standards could be made more specific and more stringent than they now are.

The external environmental and social costs of strip mining can only be internalized by means of an effective enforcement program. In this regard, I would refer the comittee and Senator Fannin, who asked earlier about the internalization of strip mine costs, to chapter one of the council environmental quality report, pages 130 and 131. It gives some very specific and up to date, some of the most current and up to date figures on that subject.

As a function of proper land-use planning, strip mining should be prohibited from any area where it would constitute irreversible or significant damage to or a conflict or preemption of other land uses of significant historic, cultural, natural, scenic, agricultural, recreational, industrial, or residential value.

In this regard, I note with considerable satisfaction that S. 425, more than any other piece of legislation pending before this Senate, recognizes the correlation between surface mining and the need to implement proper land-use planning, and I compliment the committee and Senator Jackson for the bill in that respect.

Lastly, in addition to initial congressional appropriation, an abandoned mine reclamation fund should be funded by means of a surcharge for each acre that will be subject to mining operations.

Under the pending legislation, and I believe all of the bills presently pending before the Senate, the abandoned mine reclamation fund is funded through congressional appropriation. There is no surcharge to the industry or no tax of any other form to the industry for that.

We believe there is an obligation on the part of the industry to take part actively and financially in the reclamation throughout the United States.

I thank you, Senator.

Senator METCALF. Mr. Borrelli, I hope you will make a correction to the permanent record about that suggestion of Senator Hansen's.

Mr. BORRELLI. I certainly will. And, again, I apologize to the committee.

Senator FANNIN. I would like to refer, Mr. Chairman, if I could at this time—I may have to go to a meeting—to page four of your statement, "We are not on the verge of a coal shortage as many would have you believe."

I have never known of anything that has been publicized more than has the abundant availability of coal in the United States. So, who is publicizing that there is a coal shortage?

I think that's a very irresponsible statement because everyone is saying, "We don't have oil; we don't have gas, but we have an ample

supply of coal for hundreds of years." So, why would you make a statement like this?

Mr. BORRELLI. The question is the production of coal. We have found, in many States where we have been actively involved in amending or passage of State laws, responsible laws to control strip mining, we have very often run across this argument on the part of the industry that if you were to pass this law, whatever the law would be production would be cut off tomorrow, that the coal isn't there or we can't get it in a sufficient period of time.

All we are trying to illustrate here is that this country has sufficient coal reserves throughout the country to be both selective and responsible in the means by which it is extracted and the locations in which it is extracted.

Senator FANNIN. Let's just review the remark you have just made. If the four corners area had been mined underground, would it have been adequate to supply the coal?

Mr. BORRELLI. I would have to check reserve figures on that.

Senator FANNIN. It's absolutely absurd. Of course, they would not have.

Then, on page 14, you state, "We urge that no permits be granted where adequate State land use or coastal zone planning had not been completed."

Are you just trying to put the companies out of business?

Mr. BORRELLI. No, sir. We believe that strip mining is one of the most basic land uses that one can call for, that one can engage in. It involves the disruption of not only the top soils, but the subsoils and the substrata. It has such a basic and disruptive affect on the land that we do not believe that one can responsibly engage in strip mining without coordinating it directly with the effective land use policy controls. Without a land use policy, Senator, we do not believe that strip mining anywhere can be justified.

The British, the Germans, the Australians, other nations that are engaged in strip mining throughout this world do not touch one square inch of land without knowing exactly what its past, its present, and its future use will be, and they plan for that use.

It is an amazing feat to behold. It makes our mining industry and our laws look paltry by comparison. And, that's what we are calling for, that degree of concern, that degree of law to protect the land.

Senator FANNIN. I think you are overstating your case. I am familiar with what is happening in many of the countries about which there have been studies.

But, are you contending that underground mining is preferable to strip mining? You are just saying that, even though the health and safety of the miners are involved?

A billion dollar a year bill was just enacted on black lung. We have a thousand miners that are in jeopardy in underground mines. I think that is a far greater consideration than some of the considerations you have beeen giving.

Mr. BORRELLI. I share that concern, Senator, and I believe it is an important consideration, and I believe it is a fair question.

I was interested in the testimony presented yesterday by Arnold Miller, president of the United Mine Workers, a very brief statement, admittedly. He was called away elsewhere for important business, as you well know.

But, in that statement, the president of the United Mine Workers tacitly supported a prohibition of strip mining on steep slopes, provided, of course, that there were adequate measures taken for the employment of local dislocations of employment.

I stood with Mr. Miller, and I had the honor to stand with Mr. Miller in the halls of the West Virginia Legislature 2 years ago when he was still acting as the chief officer of the Black Lung Association, and he told the State legislators in West Virginia that strip mining in West Virginia had to be abolished for two reasons.

One, it was putting men out of work. For every strip mine opened, a deep mine was closed, and the deep miners were put out of work.

Second, and a very compelling argument which I think brought many members of the West Virginia Legislature to their senses, was that the deep miners of this land live in the hills and hollows of West Virginia where strip mining was conducted, and it was their land that was being destroyed by strip mining.

Now, I ask this committee and I plead with this committee to turn to Mr. Miller, now that he is president of the United Mine Workers, and see where the union stands.

Senator FANNIN. I am concerned about all of the people of this country, not just about what Mr. Miller says. I am vitally concerned about the economy of the country, the welfare of the people of this country. We have an obligation to take into consideration just what can be done economically as well as the health and safety of the people into consideration.

One question you haven't covered is the economic feasibility of strip mining versus underground mining: The product lost, the costs economics of fuel substitutability, and health and safety.

We are trying to displace oil, natural gas, and those fuels which are of short supply in this country with a energy resource that is readily available in many areas of the country. I talked yesterday about—about those States where there would be adequate reserves of coal for the purposes about which we are talking. But certainly, approaching it from the standpoint of your statement, our need would not be at all satisfied.

Mr. BORRELLI. With regard to the previous question which leads to the answer of your present question, I don't want this committee nor the good Senator to believe that I, as a representative and spokesman of the Sierra Club, am making a statement with regard to the impact of a prohibition on any form of strip mining, whether it be contour mining or area mining, or the whole thing, what the impact of that would be on the health and safety of underground miners.

I am only asking this committee that if the president of the United Mine Workers feels that the impact on health and safety of underground miners is within the control of this country, both technologically and with respect to the laws of the land, I will go with the opinion of Mr. Miller in that regard, and would not presume to tell this committee what that impact would be.

Senator FANNIN. I don't think you are considering the economics. I am considering the economics and health and safety. At the same time, I am also perhaps more concerned about the environment in Arizona than you are where we depend on strip mining.

The people of our State such as the Navahos have certainly de-

pended on coal for most of the benefit. I feel that their land will be in better condition after the mining has been completed than it is now.

So, I think if you talk in generalities, we should be a lot more specific when we make statements about what should be done. Thank you.

Senator METCALF. Senator, as I said yesterday, I was rather disappointed that Mr. Miller was unable to testify and had filed a very brief statement.

As chairman of this subcommittee, I have written a letter to Mr. Miller asking him to amplify his statement as to the feeling, as representative of a great union, and the questions propounded by the Senator from Arizona will be incorporated.

Senator MCCLURE. I think at this point in the record, it is the proper time to make at least one clarification. There are self-interests involved for everyone of us who is interested in this problem.

Mr. Miller, as president of a great labor union, has a legitimate and very logical self-interest in the people he is representing. Let's not overlook the fact that the people he represents work underground; they do not work in the strip mines, and as a result, there is a special, particular, and rather peculiar reason why he may advocate going back underground as compared with those members of the Operating Engineers' Union who work in the strip mining operation.

Mr. BORRELLI. You are aware, of course, Senator, that there are a considerable number of surface miners who are card-carrying members of the United Mine Workers. And, furthermore, that all coal, no matter how it is mined in this country, contributes to the pension fund of the United Mine Workers.

Senator MCCLURE. Certainly, I am aware of that.

Mr. BORRELLI. That self-interest is not as single-personed as you implied.

Senator MCCLURE. I don't mean to imply that. But, I just wanted to make it clear that there is some self-interest involved in a position he might express urging people to go back underground.

Senator METCALF. I want to say to the Senator from Idaho that I am going to ask for testimony from the steelworkers who are concerned in hard rock mining underground, as well as Operating Engineers and the Teamsters, who are so concerned with development of coal and other minerals.

Senator HANSEN. Mr. Chairman, I want to express my appreciation to Ms. Louise Dunlap for her testimony. I am certain she is better informed of Scranton, Pa., than I am. I have been there. I am aware of what is being done to backfill some mine voids which are causing severe environmental problems.

We have a similar situation in my State of Wyoming. I hope as we consider the alternatives before us, we do not overlook the fact that simply to go underground and not to backfill mines as material is taken from them may, indeed, only be a postponement of a very high social and environmental cost that will have to be paid at some later date.

I know the city of Rock Springs is experiencing serious problems, as is Scranton, Pa. I don't mean to imply that you do not share my feeling. I just wanted to point out that it is expensive when you build a city over a mined-out area and then find 50 years later that houses start tumbling in, gas lines are severed, homes are blown up occasionally, and pollution occurs with broken sewer mains. These are things I hope we all keep in mind.

Ms. DUNLAP. Senator, I did not overlook or did not mean to imply——

Senator HANSEN. You had not implied it.

Ms. DUNLAP. On the other hand, I just want to point out that, neither should we overlook the availability and existence of the low-sulfur deep mine reserves.

Senator HANSEN. Your point is well made.

Ms. DUNLAP. Environmental problems are associated with deep mining as well as surface mining, and I don't think anyone would deny it. I think that one must consider the age of the deep mine and its special conditions, and one should not generalize. Most of the environmental damage from deep mines is due to continuing pollution from old or abandoned operations. Current deep mining technology makes these problems avoidable.

Senator FANNIN. Mr. Chairman, I must leave to attend a Finance Committee executive meeting.

But, I do want to say that my concern, as I am sure is yours, is to find the middle ground in which we can all work most advantageously to meet the "energy crisis." We have an energy crisis. I think we all recognize that. But, we have many problems in the mining industry.

There are problems which are involved in the economy of the country, such as the health and safety of the people of this country.

We have many areas in which I would be absolutely adverse to strip mining.

I happen to be from a State—I was born in the State of Kentucky—where there are deplorable conditions. But, I do think that we should have a balance, that we should be broad enough in our thinking to adjust to the problems that are very much in evidence throughout the country.

There are many places in which strip mining is the only practical way in which the resources could be obtained; in other places, underground mining. And, in many instances, I realize the benefits that will accrue are certainly not sufficient to justify the damage done to our environment.

So, I don't want you to feel that I have not considered in my work the definite problems which occur throughout this Nation. But, we are now working on a very serious matter and trying to adjust our balance of trade, which necessitates low-cost energy if we are going to be competitive in the world market.

Mr. BORRELLI. Senator Fannin, I also hope you would not leave with—thinking that we, too, are unconcerned with these problems. We, too, believe that a balance can be made. We may differ as to where one strikes that balance, but we wholeheartedly agree that a balance, of course, is necessary if our economy and environment is to coexist, and I know of no other social arrangement that has worked in this country.

Senator FANNIN. Thank you.

Senator METCALF. Thank you, Senator Fannin.

Senator McClure, do you want to interrogate this witness or complete the panel?

Senator MCCLURE. I would just as soon complete the panel.

Senator METCALF. Very well. So, would I.

[The complete statement of Mr. Borrelli follows:]

STATEMENT OF PETER BORRELLI, EASTERN REPRESENTATIVE

SIERRA CLUB, WASHINGTON, D.C.

ON

THE SURFACE MINING RECLAMATION ACT OF 1973 (S. 425)

BEFORE THE

SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE

MARCH 15, 1973

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I. Introduction

Mr. Chairman, members of the Committee, my name is Peter R. Borrelli, and I am here today to testify on behalf of the Sierra Club of which I am its Eastern Representative. I thank you for this opportunity to appear before you.

The Sierra Club has been directly concerned with strip mining for many years. Its members throughout many of the Eastern states and elsewhere where strip mining has been extensive have borne witness to the uncontrolled spread of this mining technique. Through their elected officials and the courts they have joined with other citizens of these states in numerous attempts to curb the abuses of strip mining. In recent years and months, they have worked in coalition with others to amend the laws in Pennsylvania, Ohio, Kentucky, Tennessee, New Mexico, Wyoming, West Virginia, Virginia and Alabama. And one lesson has been universal; namely, the public has found that it has little control over strip mining.

The Sierra Club has also supported studies, books and films, and encouraged others in research into this field. And where necessary, we have pooled our resources and talent to test the laws. In 1971, for example, we joined with the Natural Resources Defense Council and the Environmental Defense Fund in bringing suit against the Tennessee Valley Authority for its failure to adequately comply with the National Environmental Policy Act in matters relating to its purchase and use of strip mined coal.* Since that time, numerous other local citizens' groups have joined us in this important legal action. The case comes to trial this spring.

Considering this interest and involvement, we especially appreciate this

* TVA is the world's largest purchaser of strip mined coal. In 1971, the agency purchased 38 million tons of coal, 22 million tons of which came from strip mines.

opportunity to testify before you. The testimony that follows first addresses the general policy questions relating to strip mining (especially for coal) and, secondly, analyzes S. 425.

II. PHASING OUT STRIP MINING

Do conservationists oppose all strip mining?

If strip mining means destroying or diminishing the availability of public and private land for recreational, commercial, industrial, agricultural and forestry purposes, by causing erosion, landslides and subsidence, by contributing to floods and the pollution of waters and air, by destroying fish and wildlife habitat and impairing natural beauty, by frustrating efforts to conserve soil, water and other natural resources, by destroying public and private property and by causing hazards to life and property--then conservationists most certainly oppose strip mining.

If strip mining means scalped hillsides, jumbled mounds of debris, pools of stagnant water, burning coal wastes, slabs of slate and sandstone, shattered tree trunks, rivers and streams choked with sediment and destroyed by acid yellow water--then conservationists are opposed to strip mining.

If strip mining means desolation and ruin and waste--then conservationists are opposed to strip mining.

If strip mining means contempt for the land and the people--then conservationists oppose strip mining.

Conservationists and the public at large are not convinced that there is any other way of strip mining for coal. They know that coal companies have turned to the perverted technology of strip mining in recent years primarily because it is cheaper to strip mine than to deep mine. And they fear that the mayhem that has so disfigured the face of Appalachia and the spirit of its people will be allowed to spread throughout the country like a cancer.

Robert Frost once wrote: "The land was ours before we were the land's/... something we were withholding made us weak/ Until we found out that it was ourselves/ We were withholding from our land of living..." That "something" Frost was referring to is love and respect and care for the land. And that something is what is missing today in the coalfields of the United States. Our land policy is one of massive consumption and waste. Our regulatory system is grossly promotional. Our technology both in underground and strip mines is primitive.

It is our reasoned judgment that in this context of uncoordinated policy and considering the well known and documented environmental impact of strip mining, the Congress should direct the Nation toward less exploitive means of mineral extraction and seek a gradual phase-out of strip mining for coal.

Supporters of strip mining are not timid in their response to this position. TVA Chairman Aubrey Wagner told the Tennessee Legislature in 1971 that those who oppose strip mining

> would outlaw strip mining, even in the face of the fact that such action would create a power shortage in which industrial activity would be severly curtailed, unemployment would increase, commerce would stagnate; and home life would be disrupted.

The charge is grossly misleading and unsubstantiated. We contend that the so-called "energy crisis" is fabricated. The only real problems we face are ones of policy and direction. "The structure of our governmental institutions in the energy field is now so obsolete that no administration, whatever its intent, can carry out a rational program," notes a recent study of the Mitre Corporation. But Congress has the opportunity and the authority in its consideration of strip mining legislation to begin to untangle this institutional mess and to set new directions and policies that make environmental sense.

We are not on the verge of a coal shortage as many would have you believe. U.S. coal reserves are estimated to be in excess of 3 trillion tons of which 671 billion tons have been specifically located. And most of this coal can be obtained by underground mining methods. In fact, the ration of deep-mine reserves of low sulphur coal to strip mined low sulphur coal is about 8 to 1. We can well afford, therefore, to be selective about where and by what methods we extract it.

Phasing out strip mining in mountainous regions as a logical first step would necessitate finding alternate sources of coal. In the arc of states from Michigan through the Appalachians to Alabama, where approximately seven-eighths of the contour-mined coal used for electrical generation is used, there are about 18.7 billion tons of currently recoverable deep-mined coal with a sulphur content of less than 1% by weight.* In the West, where massive strip mining operations are being planned, about 221 billion tons of recoverable low sulphur coal can be deep-mined in Wyoming, Montana, Colorado and other states.

Intensified deep mining would, of course, necessitate reopening many deep mines that have been shutdown in recent years by strip mines and opening new mines. The employment potential in area strip mines and deep mines of the northern and southern Appalachian region as opposed to contour strip mines is particularly favorable.

Advances in underground mining such as the long-wall method also exist that would minimize occupational hazards. And within conventional mines recently published data by the Bureau of Mines indicates that we have at long last turned the corner in meeting the health and safety standards of the Coal Mine Health and Safety Act of 1969.

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* Source: Environmental Policy Center estimates based on available data.

Phasing out strip mining, particularly in mountainous regions, will, of course, only make economic sense if the environmental and social costs of strip mining are internalized; something that can only be accomplished through an effective enforcement program. If these external costs are not internalized, the industry will continue to lay waste to many more areas within Appalachia and the Midwest and to new locations in the Rocky Mountains, Northern Plains and Southwest.

Internalizing costs in many regions will unquestionably make strip mining competitive with deep mined coal. But where the internalization of costs in strip mines and/or greater reliance on deep mined coal results in increased fuel costs; we believe the costs to the consumer will only be marginal. Restructuring electric utility rates along lines suggested by many energy researchers represents one of a variety of options available to us.

It is not clear to us that measures short of these will adequately serve to protect the environment at this time. For this reason, the Sierra Club cannot fully support any of the pending legislation other than that introduced this week by Senator Clifford Case calling for a phase-out of coal strip mining.

Assuming, however, that not all coal strip mining can or necessarily should be eliminated in the immediate future; we recommend that Congress also establish adequate enforcement authority to assure maximum enforcement of existing laws and to establish additional regulatory mechanisms for further minimizing environmental damages. Such legislation should ideally apply to all strip mining operations for all minerals, although we question the wisdom of trying to cover the entire field at a time when the coal strip mining situation calls for immediate and specific reform. The remainder of our testimony will, nevertheless, address itself specifically to the provisions of S. 425, the "Surface Mining Reclamation Act of 1973."

In short, our position is that without a more advanced technology, improved planning, improved regulations and improved enforcement we cannot curb the rampant abuses of strip mining. This position is supported by no less an authority than the Presidents Council on Environmental Quality.*

We conclude, further, that without such controls, strip mining, particularly on steep slopes, should be phased out according to as orderly and as prompt a time schedule as feasible.

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III. ANALYSIS AND AMENDMENTS TO S. 425

A. Federal Role -- Sec. 201, 204, 205

The nature, extent and environmental impact of surface mining are well known and documented. Less than adequate knowledge is available concerning the location and pollutant characteristics of drainage from abandoned mines because no unified program has ever existed to attack these derelict pollution sources. There is also a pressing need for research into developing innovative mining and reclamation methods and systems to eliminate continuous polluting discharges after mining.

And it is obvious to us that without a radical technological "breakthrough" or policy change, mining will continue to be a dominant method for supplying the nation with its energy and basic materials. Yet no comprehensive plan or policy exists within the Federal Government to minimize the environmental impact of mining, particularly strip mining.

Twenty-eight states have strip mining laws; however, almost all of them are deficient in many respects. The legislative experience of the states is also varied. On one hand, there are states like Pennsylvania (unquestion-

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* "Coal Surface Mining and Reclamation," March 1973, p. S-15.

ably the most advanced in the field) with considerable experience with strip mining. Within these states, laws have been passed and periodically amended for more than a decade. Progress has been slow and deliberate and often legislative reforms have b en quickly frustrated by the sheer force and momentum of an expanding industry. While we do not mean to be critical of those who have labored arduously to reform mining practices in some of our Eastern states, it is now apparent that the magnitude of the problem transcends state jurisdiction..

On the other hand, far many more states with little or no experience with strip mining find themselves on the threshold of environmental disaster. States like Alabama, Wyoming, Montana or the Dakotas, for example, have little real experience in regulating strip mining, and belated efforts to act into law the necessary controls is proving extremely difficult. The Wyoming Legislature, which meets for 40 days every other year, has just adjourned after a bitter fight over strip mining. And while the spectre of massive mining operations in that state is becoming more and more of a reality, no action was taken. Numerous legislative proposals before the Congress today are based on the mistaken assumption that every state is sufficiently educated, concerned and politically able to bite the bullet. As this committee well knows, the mere urgency of a situation is seldom sufficient motivation for legislative action. Congress would be sadly deceiving the American people, therefore, if it were to pass into law any strip mining bill which left the job of controlling strip mining primarily up to the states.

It is important that the states play a major role in implementing the requirements of this program because of their available manpower and knowledge of local conditions, etc. However, it is clear that even the moderate requirements of S. 425 could not be immediately met by most of the states, if not all of the states, without obtaining new legislative authority

which could delay the program several years. The nature of the rapidly expanding mining industry, particularly strip mining, and the inherent environmental damages, dictates that a strong uniform program be put into effect immediately. At the very minimum, such a program should include: continuous monitoring, permit veto, and Federal override authority.

The provisions in Secs. 201 and 204 (of S. 425), in our understanding, first would give the Federal Government twelve months to issue rules and regulations, and then would allow the States twelve months to come up with a conforming regulatory program to be eligible to assume full control over strip mining. The presumption here is that the primary responsibility for regulation rests with the states , with the Federal Government having a backup role. Under S. 425, there would be a one year delay before Federal rules and regulations were issued and another year's delay before the State programs were submitted. Considering the various opportunities for State objections to the Federal rules and regulations and the opportunities for delay relating to Federal approval of the State program and appeal and resubmission on the part of the States, we are talking in practical terms of at least a 3 year delay before S. 425 was actually implemented.

In our judgment, the Federal program suggested in S. 425 could be improved if it were administered along the lines of the National Pollutant Discharge Elimination System now being administered by EPA. And upon enactment of a Federal law, the Federal Government should, within 90 days, promulgate regulations establishing guidelines for the minimum procedural requirements and other elements of any State program necessary for the administration of its own program. Under this system, within 180 days of promulgating these guidelines, no operator could issue without a Federal permit. But, at any time after the promulgation of the guidelines, a state should be allowed to submit a description of the program it proposes to

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establish and administer, along with assurances that adequate and statutory authority exists to carry out the prescribed program.

B. Federal Agency - Sec. 202

S. 425 would authorize the establishment of an Office of Land Use Policy, Reclamation and Enforcement within the Department of the Interior. While it is noted in Sec. 202 (lines 18-22) that : "no existing legal authority in the Department of the Interior which has as its purpose promoting the development or use of coal or other mineral resources, shall be tranferred to the Office," we seriously question that such a split-personality is possible.

We are also greatly alarmed that this legislation would entrust the Department of the Interior with a responsibility it heretofore has abrogated. This charge which has been made by conservationists for years was documented by the Government Accounting Office in two documents issued in August 1972 and February 1973. In brief, the GAO found that Interior was not adequately enforcing its own regulations governing surface coal mining reclamation on Public and Indian lands.

The GAO report also found that last October CEQ Chairman Russell Train had recommended to Interior "that the Department give serious consideration to the adoption of regulations that would strengthen its ability to more effectively manage the coal resources on public lands."

And the Administrator of the Environmental Protection Agency, William D. Ruckelshaus, has criticized Interior's administration of the regulations. In a letter released November 3, 1972 by the Conservation and Natural Resources Subcommittee of the House Committee on Government Operations, he said:

> We have found the (August 1972) GAO report to be a useful analysis of management problems that have contributed to the continued degradation of public lands and resources from mining operations and mineral

> explorations...The major problems confronting the Department of the Interior in implementing its regulations appear to be a lack in its mineral programs of personnel trained to perform environmental analysis, and absence of a detailed inventory of public lands and resources, and a lack of enforcement of environmental stipulations and restoration requirements...

The Office of Land Use Policy, Reclamation and Enforcement that S. 425 seeks to establish could conceivably meet the informational and personnel deficiencies highlighted in the GAO, CEQ and EPA statements. Whether this Office could also divorce itself from the overall promotional orientation of this Department remains to be seen.

We ask that some consideration be given by this committee of further expanding the role of EPA in this field. The new amendments to the Federal Water Pollution Control Act of 1972 have directed EPA to develop guidelines for identifying and evaluating the nature and extent of and processes, procedures, and methods to control pollution resulting from mining activities. It would only seem appropriate that this agency should have some direct role in the enforcement of strip mining regulations. S. 425 (Sec. 202 (c) (6))does require that Interior "consult" with other Federal agencies, but this is too vague to carry the force of law. We recommend that EPA be given at least veto authority as is provided for in the Administration's bill.

Although we have considerable difficulty with the placement of the Office of Land Use Policy, Reclamation and Enforcement within Interior, we do wish to commend the bill's sponsors for charging this Office with an overall land use planning responsibility. Of the dozens of regulatory bills introduced in the Congress in the past two years, S. 425 is the only bill that recognizes that regulation of strip mining is essentially a function of land use policy.

C. Moratorium on Surface Mining Operations for Coal Pending State Compliance -- Sec. 206

The idea of a moratorium on all new strip mines pending state compliance is extremely appealing to conservationists, but it is questionable that Sec. 206 would in fact be in the best interest of the environment. Given the implementation schedule of the bill, the moratorium would theoretically be in effect until the Federal guidelines were promulgated and until the States had time to respond with a description of their prescribed program. One possible effect of such a moratorium is that both the Federal Government and the States would adopt "crash" rule making procedures. The States in particular would be under tremendous pressure to force through a state program at the possible sacrifice of sufficient public participation. Certainly few land use planning considerations could be made under such pressure.

The moratorium on new mines would make far more sense if it were the intent of Congress to phase-out contour and area strip mining of coal and to encourage alternate means of extraction.

D. Permit Application Requirements -- Sec. 209

As was previously mentioned, S. 425 goes further than other pending legislation in recognizing the relation between strip mining and land use planning. But essential to any land use decision is full and complete information about the proposed uses of the land. Sec. 208 of this bill calls for disclosure of certain basic information relating to the applicant, surface and mineral rights, bonding and insurance; but there are no specific requirements for information concerning the specific mining and reclamation operations. The apparent intent of the legislation is that Federal rules

and regulations together with State requirements will cover the specific details of mining operations, but we believe that the legislation without being inflexible should be more specific and mandate minimum requirements for the preparation of reclamation plans. The House-passed bill of the 92nd Congress details much of this concern.

E. General Criteria for Strip Mining and Reclamation (Sec. 212)

A major concern of conservationists throughout the country is the extent to which any Federal legislation will statutorily define reclamation. The experience of the States to date reflects a wide range of reclamation practices, most of which are totally unacceptable to the general public and many of which only partially control environmental deterioration. Practices throughout the States vary from virtually no reclamation in Alabama to extensive reclamation in Pennsylvania. But often we find that "reclamation" refers to a process rather than a measure of performance. It is a very imprecise science at best.

This committee has heard a great deal about the fine things that are occuring in Pennsylvania. Relatively speaking, much progress has been made in that State, but I caution you against assuming that such progress can be made everywhere with the passage of this Act. First, it has taken Pennsylvania more than a decade to arrive at its present envied position. And much of what is being done within that State still deviates greatly from sound environmental protection. The administrator of Pennsylvania's strip mining reclamation department, William Guckert, was recently reported to have said that if he conducted inspections of active strip mines immediately after a rainstorm, he could close down all of the mines in the State under the state's new law. Obviously, Mr. Guckert is not inspecting after every rainstorm, which means that the reclamation

being practiced in Pennsylvania is Mr. Guckert's perception of what environmental protection is adequate. While this enforcement strategy may be an administratively expedient course of action, it does say something about the extant technology. In the mountains of West Virginia people speak more bluntly. There it is widely agreed that "reclamation is like putting lipstick on a corpse."

S. 425 contains many of the essential reclamation requirements that should constitute minimum requirements for Federal legislation. Of particular importance is the requirement that the land be restored to a condition at least fully capable of supporting the uses which it was capable of supporting prior to mining. More than anything else, strip mining must be recognized as being a major and disruptive land use. This is what primarily distinguishes U. S. strip mining from that of Great Britain and West Germany. Instead of strip minimg for coal and other minerals in accordance with comprehensive land use and coastal zone plans, the prevailing attitude in the U. S. is to strip first and ask questions later.

All but a handful of the States make no mention whatsoever of land use planning. And of that handful, all that is actually required is that an operator first consider the prior uses which an area was capable of supporting, and then propose a future use. Sometimes the statutes boil down to nothing more than a determination of what constitutes the "highest and best use" of an area--a mindless distinction that rarely assures environmental protection.

If S. 425 is to be fully coordinated with land use planning processes, it is essential that the performance criteria of Sec. 212 also provide that the applicant's proposed land use following reclamation be practical, reasonable and consistent with applicable land use policies and plans. Insofar as S. 425 provides for the creation of an Office of Land Use Policy,

Reclamation and Enforcement and grants-in-aid to States for the purposes of developing appropriate land use plans; we urge that no permits be granted where adequate state land use or coastal zone planning has not been completed. Under a Federal permit system, as suggested earlier, the Federal Government could assure that strip mining complied with sound land use plans through a system of incentives and sanctions extending beyond the funds available under Titles III and IV of this Act.

Other performance standards should include general provisions for:

1. protecting the surface land owner's use of the land
2. limiting the area to be excavated
3. limiting the total area to be excavated at any one time
4. maximizing the utilization and conservation of the mineral or solid fuel resource being recovered
5. insuring that no trees, rocks, debris, abandoned or disabled equipment, soil,spoil material, or mineral matter be temporarily or permanently placed below the bench or mining cut on natural or artifical downslopes, in hilly or mountainous regions
6. separating of topsoil materials for use in reclamation
7. stabilizing of all overburden by layering, compacting, imposing slope and height limitations and by establishing, where possible, vegative cover
8. segregating of acid forming or toxic materials and methods of disposing of such materials upon completion of the operation
9. insuring that the approximate original contour of the area mined be restored
10. backfilling and compacting with all highwalls, spoil piles and depressions eliminated
11. creating stable and self-regenerating vegative cover of native origin wherever feasible
12. maintaining water quality in conformance with all State and Federal Water Quality laws
13. correcting off-site damages
14. protecting permanent streams, lakes and other water impoundments

F. Performance Criteria for Strip Mining on Slopes Greater than 20 degrees

The findings and declaration of S. 425 state that

> many unregulated mining operations result in disturbances of surface areas that burden and adversely affect commerce and the public welfare by destroying or diminishing the utility of the land for commercial, industrial, residential, recreational, agricultural and forestry purposes, by causing erosion and landslides, by contributing to floods, by polluting the water, by destroying fish and wildlife habitat...

While it may not be possible at this time to establish a direct causal relationship between environmental destruction and strip mining above a specific degree of slope, there unquestionably is a correlation between the occurrence of flooding, erosion, landslides and water pollution and strip mining in mountainous regions. By all rights, stripping should not be allowed on these lands because there has not been developed a technology which can effectively reclaim these areas.

"Our land is dying," cry out the people from the mountains of Appalachia. What is obvious to them should be obvious to the Congress by now. Nothing this Committee or the Department of the Interior or CEQ or the coal industry can say or do will erase this simple truth.

A minimal response to this public out cry would be a regulatory bill which specifically cracks down on the abuses of strip mining in mountainous regions. And we further disagree with the premise of this bill (Sec. 101 (4)) that "because of the diversity of terrain, climate, biologic, chemical and other physical conditions in areas subject to mining operations, the primary governmental responsibility for developing, authorizing, issuing and enforcing regulations for surface mining and reclamation operations...should rest with the States..."

If Congress does not crack down on strip mining in the mountains, we

have no reason to believe that the States will. For this reason, we suggest that there be separate performance standards for strip mining on slopes greater than 20 degrees--recognizing the unique problems of reclamation in such terrain in much the same way that the proposed legislation recognizes the unique problems posed by open pit mines (Sec. 212 (C)).

On slopes greater than 20 degrees, no permit should be granted unless an operator can reasonably demonstrate that the mining and reclamation activities will not result in:

1. the permanent placement of overburden or other waste material on the natural slope above, below or adjacent to the excavation
2. slides and excessive erosion
3. impoundments, either temporary or permanent, of water except for the intermittent retention of water for flood or sediment control purposes
4. the exposure of the highwall
5. a vegative cover less than what is necessary to stabilize and cover the mined area to an equivalent or better condition than what existed prior to mining

Complete backfilling should also be required to a contour necessary to cover the highwall and which will maintain stability following the mining and reclamation. Furthermore, no final graded slope should exceed the natural angle of repose for the regraded materials or the natural slope of terrain for the mined area (or whichever is less). And as an added precaution, no permit for mining operations on steep slopes should be issued for more than a year at a time.

G. Designation of Lands Unsuitable for Strip Mining (Sec. 205)

Section 215 of the legislation before you properly recognizes one of the essential elements of good land use planning. Before we can logically

commit an area to such a single-purposed use as strip mining, we must understand the capacity of the area to withstand such use. We must also determine, on the basis of sound data, the effect of mining upon other values and potential uses.

The provisions of Section 215 establish a mechanism by which the States may decide which, if any, land areas are unsuitable for strip mining. This is probably the most basic land use decision the States can make. And in our judgment, no new mining operations should be permitted in a State until such basic judgments have been made. For this reason, we would recommend that strip mining be prohibited from any area where it would constitute irreversible or significant damage to or a conflict or preemption of other land uses of significant historic, cultural, natural, scenic, agricultural, recreational, industrial or residential value. Identification of such areas, furthermore, should be a condition of financial assistance to the States under Titles III and IV of the Act as well as a requirement for a State's eligibility to assume full control over strip mining and reclamation operations on lands within that State. Determination of the unsuitability of land for strip mining should be integrated as closely as possible with present and future land use planning and zoning processes at the Federal, State and local levels. And full public participation in such determinations should be mandatory.

H. Abandoned Mine Reclamation Fund--Title III

According to Government sources*, this year 20,314 strip mines and 4,834 underground mines will affect approximately 272,000 acres of land, most of which will not be adequately reclaimed. This growing inventory of affected

* Source: Environmental Protection Agency

land has reached 13 million acres and, with projected energy demands and increased emphasis on strip mining for most minerals and fuels, will exceed 30 million acres by the year 2000. It is also estimated that there are approximately 300,000 abandoned mines in the U.S., many of which continue to discharge pollutants into the environment and many of which preempt any future use of the land.

Virtually all of the strip mining bills pending include a provision for the restoration of abandoned and unreclaimed mined areas. We applaud this fact, but we continue to have grave reservations about the practicality of funding an "orphaned mine" reclamation program with appropriated funds. Given the state of the Federal budget in the area of conservation programs, we are skeptical that the kind of crash program that is required could sustain itself, let alone commence.

Aside from moneys available to the Fund derived from the sale, lease or rental of lands and any user charges imposed on reclaimed lands; we would recommend to the Committee requiring strip mine operators to pay a surcharge of $50-$100 for each acre that will be subject to the mining operations under the permits authorized by this Act.

The surcharge has the benefit of providing continuous funding for orphan mine reclamation while at the same time alleviating the pressure on appropriated funds. Then too there is the moral question of responsibility and obligation. The coal industry has spent millions of dollars in recent years promoting its image of responsibility while actively opposing more stringent state controls. Here is an opportunity for the industry to put its money to some good.

CONCLUSION

The public's experience with strip mining has made it plain that the present way we gouge the land for coal is an enterprise that is beyond effective public control. Most states, even those with relatively strong regulations, have not begun to substitute a sense of the total public interest for the will of the private and enormously powerful coal companies. The public is without a voice in controlling strip mining. The federal government has no regulatory program, although some weak versions are under Congressional consideration. Moreover, the government itself, through the coal purchases of the Tennessee Valley Authority and through the leasing practices of the Interior Department is actually spreading and increasing strip mining. The web of energy policies that directly affects coal markets is a tool of convenience for the energy companies, not a coherent policy designed to produce power at reasonable and equitable cost.

It is not illogical, in the face of this absence of any rein on the coal companies, to ask that strip mining be stopped--now. Perhaps not stopped for all time and in all places, but stopped until we can create even the most rudimentary means of making strip miners accountable to a broader public standard of care and caution. Would anyone object if there were selected strip mining in non-mountainous areas consistent with a comprehensive land use plan, with provisions for the reconstruction of the wasted land? I think not. But we must face the fact that it is the companies, and not the government nor the people, that now make the decisions affecting the land and the lives of Americans. Realistic state controls like Pennsylvania's would offer an effective control mechanism, but it is virtually impossible to insulate the enforcement of such controls from local political and economic influence. As a result state controls are of necessity more

prescriptive than preventative in nature. The damage is frequently done before the law is enacted. Federal reclamation laws would help--if they were enforced. It is not strip mining as such that is so objectionable, it is the way it is done and the way in which decisions are made about how and where it will be done that is the major cause of concern.

In recent years industry apologists have pointed to the relatively successful experience of West Germany and Great Britain to justify the continuation of strip mining in this country, without understanding the fundamental difference between these nations' attitude toward the land and our own. The key to the West German and British experience in land restoration lies in meticulously detailed planning.

Aside from Pennsylvania's belated efforts, there is no American control comparable to the European systems. Even in the relatively advanced Pennsylvania arrangement, decisions are still left to individual, privately owned and privately controlled companies as to when and where to strip mine. The state still exercises only partial control over the fate of its land. The regulatory efforts in other states are primitive in comparison to Pennsylvania's; set against the European model, they are primeval.

I know of only two prevailing philosophies of land use. The first holds that the land is to be possessed, subdued and robbed of its riches. It is characterized, in the words of Gifford Pinchot, as the American colossus "grasping with both hands, reaping where he had not sown, wasting what he thought would last forever."

I brought you into a fruitful land to enjoy its fruit and the goodness of it;" said Jeremiah, "but when you entered pon it you defiled it and made the home I have given you loathsome." The scene throughout the coal fields of this nation would be all too familiar to him today.

The model of good land use is based upon the belief, as Stuart Udall has written, that "Each...generation has only a temporary rendezvous with the land; despite fee titles and documents of ownership we are no more than brief tenants on this planet. By exercise of choice, or by careless default, we shape the land legacy of our descendants. We can either abuse the land and squander its bounty with physical and spiritual loss to ourselves and to them, or we can strive for an economy in which physical affluence and richness of spirit go hand in hand."

The more we analyze the problems of strip mining in American, the more we come back to one fundamental concept: responsibility. Responsibility is not a product of coercion, or of propaganda or of conscience. "Responsibility," wrote philosopher Charles Frankel, "is the product of definite social arrangements."

In devising a policy of land use for the nation, we must seek those social arrangements which instill a sense of caution, care and commitment. We must seek to replace arrogance with modesty.

Any serious national effort in this direction would among other things prohibit the destruction long associated with strip mining. It would prohibit strip mining in mountainous regions and where prompt and complete restoration of the land cannot be achieved. It would incorporate such regulation within an overall regional development plan. It would provide for open, public involvement in formulating detailed requirements for mining and land restoration and in determining the future use of the land. It would impose a severance tax on future mining to finance reclamation of American's ghastly backlog of plundered acreage.

SUMMARY OF REMARKS BY PETER BORRELLI, EASTERN REPRESENTATIVE, SIERRA CLUB, BEFORE SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE, ON S. 425, WASHINGTON, D.C., MARCH 15, 1973.

V. Summary of Positions

The basic positions set forth in the attached testimony are as follows:

1. The absence of adequate land use planning, a coordinated energy policy, stringent performance standards, strong enforcement, and more advanced technology can only lead to continued devastation in Appalachia and uncontrolled expansion of strip mining in the West.

2. Current technology is particularly inadequate to assure long-term reclamation on steep slopes (slopes in excess of 20 degrees) and in arid regions of the West.

3. Congress should establish a policy directing the nation toward less exploitive means of mineral extraction than strip mining and take sufficient legislative action to achieve a gradual phase-out of strip mining for coal.

4. Sufficiently abundant low sulphur underground coal reserves exist to justify greater selectivity in the location of mining and the means by which that coal is extracted.

5. No state presently has sufficiently stringent performance standards or enforcement, and a clear need exists for strengthening individual state programs by means of a Federal regulatory program.

6. Experience suggests that the Department of Interior cannot balance its land management and development mission with an effective enforcement program. Of the existing line agencies, only EPA has sufficient enforcement experience to administer such a program. At the very least, any Congressional action should require EPA concurrence.

7. An effective Federal regulatory program should include at the very minimum continuous monitoring, permit veto, Federal override authority; and should be administered along the lines of the National Pollutant Discharge Elimination System.

8. Statutory performance standards should be as specific and as stringent as is possible to afford uniform and equitable administration of the law.

9. The external environmental and social costs of strip mining can only be internalized by means of an effective enforcement program.

10. As a function of proper land use planning, strip mining should be prohibited from any area where it would constitute irreversible or significant damage to or a conflict or preemption of other land uses of significant historic, cultural, natural, scenic, agricultural, recreational, industrial, or residential value.

11. In addition to initial Congressional appropriation, an Abandoned Mine Reclamation Fund should be funded by means of a surcharge for each acre that will be subject to mining operations.

Senator METCALF. So, you are back in charge, Mr. Pickelner.
Mr. PICKELNER. Mr. Franson.

STATEMENT OF JOHN FRANSON, NATIONAL AUDUBON SOCIETY

Mr. FRANSON. Thank you.

I am John Franson, and I am a representative of the National Audubon Society. I appreciate the committee's anxiousness, I should say, about speeding up the testimony. So, if you will include my testimony as I have submitted it, I will just summarize.

Senator METCALF. Thank you very much.

All testimonies submitted will be included in the record, as if read, and summaries will be welcome by the committee.

Mr. FRANSON. We feel that probably the most immediate need in S. 425 and S. 923 is the need for interim regulation by the Secretary of the Interior, and the spelling out of some criteria for the Secretary to follow.

As you will note, in the pages of the testimony, we have outlined some of the criteria which we feel should be in this legislation; namely, permits for surface mining of coal should be granted for 1 year, not for 5 years.

We feel that the permit system is the only one that can insure good enforcement and compliance with the regulatory program.

We have asked for a plan for the method of operation to be included in the criteria. One of the bills, 923, does call for a method of operation, but this is not included in S. 425.

I would call the committee's attention to the serious problem of access roads. This is one of the least recognized problems in a surface coal operation. So, we spell out here in the testimony what we feel is necessary in regard to plans, maps, and so forth, for access roads, and suggest that a provision be made for a performance bond.

I don't think that the committee should overlook the problem of hauling off coal. I have just come out of the coal fields of Kentucky a day or so ago, and hauling is definitely one of the particular abuses. Overweight vehicles have had one of the worse adverse social and economic impacts in strip mining and it will be a problem in the West.

I have spent some time discussing the problem of blasting with officials of the Environmental Protection Agency. We feel blasting is going to be a particularly serious problem in the West because of the fragile land formations, and there are various ways that blasting can be controlled, such as the spacing of the holes, delayed timing devices, and so forth, even screening.

But, we do feel provisions must be made for blasting in this legislation to limit dust, noise, seismic disturbance and provide for the protection of natural scenic formations.

Another thing that we are very concerned about, and I don't think this has been pointed out yet, but we do feel it should be in the criteria of this legislation, and that is the maintenance of a surface mined land after the land has been released.

This isn't usually considered as a reclamation problem. Yet, it has some tremendous environmental consequences. In Appalachia, for example, long after the land has been released from the bond and is so-called properly reclaimed problems present themselves.

This may be of particular significance in the arid western soils.

Sound legislation should require maintenance of surface mined areas for at least 5 years after the vegetation has been established.

One approach to this, you may ask, "How is it going to be done?" One approach would be to broaden the definition of person or owner to mineral rights owner or holder including their partnership, or corporation, or Federal, or State agency.

Then, all parties directly benefiting from the mining operation would be environmentally responsible. We have attached to this testimony some definitions which we feel might help the committee in including some of this criteria in the legislation.

Under present law, the mineral rights owner bears no responsibility for reclamation. Nevertheless, he is often the person responsible for initiating the operation and for pushing the operator to get as much of the mineral as fast as he can.

So, we feel that the mineral rights operator should also be included as a responsible party for better reclamation laws, and this can be done through these definitions.

We are pleased that S. 425 recognizes the need for bonding and for insurance for personal damages. We suggest here some increases in minimum and maximum bonds that we feel should be included.

We have no quarrel with the Department of the Interior administering this law. But, in all candidness, there are special interests that we feel are represented in Interior that are unenthusiastic about mining restrictions.

It would be wise, we feel, to another agency, such as the Environmental Protection Agency, given review authority, perhaps with veto power, until hearings are held. As a matter of fact, one of the things that the Audubon Society has assigned me to is stream channelization.

I feel it might be a good idea to get the Soil Conservation Service involved in strip mining and get them out of the stream channelization business and back onto the land to control erosion.

Senator METCALF. You wouldn't want the Corps of Engineers?

Mr. FRANSON. No. But, the SCS is supposed to have the experience and expertise to do the erosion control job.

This brings us to another important point in criteria, and this is what I refer to as the total resource recovery. This really deserves the committee's attention because if a person is permitted to surface mine in an area, I think that we should insist that the mined resource of the area should be totally recovered so that the area can be properly reclaimed and not disturbed again.

This has been one of the biggest mistakes of existing reclamation legislation. Time after time, we allow an operator to come into an area, remine it and this makes a mockery of reclamation and a tragedy of a watershed.

Also, you might consider this. When operators reenter an area, they should be required to do all the reclamation before they leave it. This includes cleaning up the mistakes of the past.

After all, they see the area before they go into it, and they know what's in store for them as far as reclamation is concerned. If they don't want to do that job, they don't have to go in there.

Under present law, when a previously devastated area may be stripped again, and it is almost impossible to require proper reclamation in the current operation if the existing damage is not corrected.

We refer to augur mining. We feel this is one of the most wasteful mining methods. We can only expect about 30- to 35-percent recovery from auger mining operations. We are pleased to see that S. 425 asks for a study of the feasibility of the prohibition of auger mining.

We make some suggestions here for criteria as how to control auger mining problems. For example, permitting augering only on the dip of seam, and so forth.

Any toxic material that has an adverse effect upon the environment should be buried under clean fill. We are also pleased with the watershed requirements in S. 425, which some of my colleagues have already commented on.

The National Audubon Society does support the concept of a severance tax on surface mined coal, and the earmarking of this severance tax for the rehabilitation of orphan lands.

Reclamation has to be current, and you can again see our attached definitions of this but we do encourage placing wording into the legislation, making the operation what we refer to as "current." That language is lacking at the present time.

We are pleased to see that S. 425 calls for a study of slope limitations, and we don't feel that it would be unreasonable to expect interim requirements in this case, providing that no fill bench may be created on slopes greater than 20 degrees.

We do have criticisms of the administration proposal, which I outline as S. 923 in this testimony. We feel that language in it, for example, would literally wipe out progressive strip mine laws, such as recently passed in Montana and Wyoming. The criteria of the bill seems to be more or less "as soon as possible," and the National Audubon Society finds the loose language of S. 923 unacceptable.

We submit for the record statements of the Honorable John Dingell from the February 21st "Congressional Record," in which he comments on S. 923, and the National Audubon Society concurs with his comments.

Senator METCALF. I believe that material has already been inserted in the record.

Mr. FRANSON. Fine. Then I'll not refer to it further at this point.

I also submit for the record a newspaper ad reflecting our philosophy on strip mining.

We haven't seen 1163. We haven't seen this yet, and we haven't had an opportunity to go over the CEQ report. We might perhaps like to introduce further comments onto our official testimony at a future time after looking at this.

Senator METCALF. We would be gratified if you would.

Mr. Borrelli mentioned Senator Case's bill, and I haven't seen it, but as I understand, it is the same as the Hector bill in the House.

Mr. BORRELLI. Identical to H.R. 1000.

Senator METCALF. Yes. And, we would appreciate comment on that.

Mr. FRANSON. All right.

As you know, the National Audubon Society does not oppose all surface mining, but we do believe that surface mining must pay its social cost and that includes its environmental cost. Where it cannot do this, then it shouldn't be done.

I defer back to the chairman, now.

[The complete statement of Mr. Franson with attachments follow:]

STATEMENT OF JOHN L. FRANSON, CENTRAL MIDWEST REPRESENTATIVE, NATIONAL AUDUBON SOCIETY

PRESENTED TO THE SENATE INTERIOR COMMITTEE ON SURFACE MINING LEGISLATION, S. 425 AND S. 923

FOR THE NATIONAL AUDUBON SOCIETY MARCH 15, 1973.

Mr. Chairman and Committee Members:

My name is John Franson. I am pleased to be here today to present testimony on proposed surface mining regulations as a representative of the National Audubon Society, whose membership is composed of more than 254,000 citizens. Strip mining will be a problem of deep concern in our 287 chapters and 265 affiliated organizations throughout the country which will be directly involved in a search for solutions to the problem.

The National Audubon Society does not oppose all surface mining of coal. We do believe, however, that if surface mining takes place, it must be conducted responsibly, that is so as to meet the social costs incurred, among these the environmental costs. Where conditions are such that surface mining cannot pay its social costs because it will entail irreversible and irreparable damage to land and water, we believe surface mining should not be permitted to take place. Good reclamation laws will help make this determination. One of the important functions of good reclamation laws will be to help define criteria.

The most immediate need in both S. 425 and S. 923 is for a provision for interim regulation by the Secretary of Interior during the period between enactment and adoption by the states. Such regulations should apply to both small and large surface mine coal operators. Other mining operations can be given more time. The Secretary of Interior should be required within six months of enactment to promulagate interim regulations or there will be a wake of devastation and destruction in the rush to obtain surface mined coal before federal regulations take effect.

The criteria established by federal legislation should be general enough to allow the states and the Secretary to administer the details, but Congress should indicate specific areas for federal concern. Some of the criteria should be as follows:

1. Permits for surface mining of coal should be granted for one year, not for five years. Where permits for minerals other than coal are concerned, the five year period may be reasonable. Since the permit is virtually the only vehicle available to an enforcement agency to ensure compliance with a regulatory program, shorter permit periods for surface mining of coal will be helpful, especially with the provision of strong bond forfeiture requirements and perhaps even a revocation clause (under Section 214 of S. 425).

2. A method of operation or mining plan must be submitted along with a reclamation plan (Section 208 (8d). (See statement attachment for definition of method of operation.) The plan should specify a) mining techniques and methods to be used; b) equipment to be used; c) a sequence or schedule of events during the period mining is to take place including interim and completion dates; and d) how extensive damages are to be avoided. S. 923 calls for a mining plan.

3. Access roads are one of the least recognized problems in a surface coal operation. They open the way to additional siltation and mud slides and actually provide channels for water runoff. Provisions should be made that access roads will not be constructed in streambeds or tributary channels so as to alter the water flow. Plans and maps should be submitted showing the land effected and the design, layout, maintenance and bedding down of access roads. (This can be even more

important in some of the arid western lands than in Appalachia.) A performance bond should be required.

4. Hauling of coal should not be overlooked. Hauling abuses, particularly overweight vehicles have had one of the worst adverse social and economic impacts involving problems of controlling dust, noise and public road breakdown.

5. Blasting can be a serious problem in the West where there are some especially fragile land formations which can be disturbed by blasting operations as far as a mile away. Congress should direct that the Secretary limit dust, noise and seismic disturbances and also provide for the protection of natural, scenic formations. There are a number of ways that this can be done.

6. Maintenance of a surface mined area after the bond has been released is not usually considered a reclamation problem. Yet this has tremendous environmental consequences. Many times landslides have occurred in Appalachia long after an area has appeared to be "properly reclaimed", and this is also a matter of particular importance in the arid western soils. Sound legislation should require maintenance of surface mined areas for at least five years after the vegetation has been established. One approach would be to broaden the definition of "person" or "owner" to "mineral rights owner or holder including their partnership or corporation or federal or state agency". (See attachment for definition of person, mineral rights, owner or holder of interests in mineral rights.) All parties directly benefitting from the mining operation would then have environmental responsibility. Under present law the mineral rights owner bears absolutely no responsibility for reclamation. Nevertheless, he is often the person

responsible for initiating the operation and for pushing the operator to get as much of the mineral as fast as he can.

7. We are pleased to note that S. 425 recognizes the need for bonding and for insurance for personal damages. Language should be inserted requiring a minimum bond of $1,000 per acre; a maximum bond of $10,000 per acre; and a minimum bond of $10,000 for each permit issued. No bond should be released until surviving vegetation is firmly established (especially important in arid, western lands, snow melt areas, etc.). Combining strong bonding requirements with short permit periods and requirement for forfeiture will guide Interior's enthusiasm for good reclamation.

8. We have no quarrel with the Department of Interior administering this law, but in all candidness, there are speical interests represented in Interior that are unenthusiastic about mining restrictions. Thus it would be wise to have an agency such as the Environmental Protection Agency given review authority and perhaps with veto power until hearings are held. As a matter of fact, it might well be a good idea to get the Soil Conservation Service involved in strip mine reclamation and get them out of the stream channelization business and back onto the land to control erosion. The S.C.S. does possess the experience and expertise to do the erosion control job.

9. Total Resource Recovery deserves the committee's attention. If a person is permitted to surface mine in an area, we should insist that the mined resource of the area be totally recovered so that the area can be properly reclaimed and not disturbed again. One of the greatest mistakes of

existing reclamation legislation has been not to insist on this and thus allow an area to be mined time after time, making a mockery of reclamation and a tragedy of a watershed.

10. When coal operators re-enter an area, they should be required to do all the reclamation before they leave it. This includes cleaning up the mistakes of the past. After all, they can see the area and if they don't feel they can reclaim the whole area, then they should leave it alone. Under present law, when a previously devastated area is stripped again, it is almost impossible to require proper reclamation in the current operation if the existing damage isn't corrected. S. 923 fails to impose this type of responsibility on the operator.

11. Auger mining is one of the most wasteful mining methods. We can expect only from 30% to 35% recovery of coal from auger mining operations and yet they present some of the most serious acid mine problems. We are pleased to see that S. 425, in part of its recommendations, asks for a study of the feasibility of the prohibition of auger mining (Section 217 (3)). Auger mining should be permitted only on the downslope or "dip" of the seam. When it is permitted on the rise, it presents acid drainage problems which to date technology has not been able to solve. Where it is permitted on the dip of the seam, the hole should be filled to the minimum of three times its diameter with impervious material (clay, etc.).

12. Any toxic material or other material that could have an adverse effect upon the environment should be buried under clean fill. We are very pleased to see that S. 425 calls for soil segregation (Section 212 (B5)). The segregation and the

replacement of the top soil and even subsoil is an absolute to insure proper reclamation and revegetation.

We are pleased that S. 425 calls for the protection of watersheds to the extent of restricting surface mining operations to an area at least a 100 feet from roads and lakes, etc. and are pleased to note that the legislation recognizes the need for rehabilitating abandoned and unreclaimed mine areas under Title III.

We fear, however, the funds authorized in Title III of S. 425 will not really be appropriated or released. The National Audubon Society supports the concept of a severance tax on surface mined coal and the earmarking of this severance tax for the rehabilitation of the orphan lands.

Reclamation has to be current (see attachment for definition of current) and we encourage you to place this wording into the bill in appropriate places.

We are pleased to note in the recommendations of S. 425 that Section 217 provides for a study of slope limitations. This section should provide for a deadline. It would not be unreasonable to expect interim requirements, in this case, providing that "no fill bench may be created on slopes greater than 20°". We have attached definitions of certain terms that will provide some additional clarification as to this suggestion.

The Administration proposal, S. 923, is not explicit as to the actions to be taken by the Secretary of Interior with regard to state regulations or when his actions should be taken. It ignores public participation and allows a long period before compliance is required. It exempts smaller operations for up to five years; allows for departure from reclamation regulations if the state determines the cost is "impracticable and that the environmental quality of the entire permit area would on balance be clearly enhanced". The determination of what

is meant by the cost of reclamation "on balance" leaves the whole act wide open. It also calls for (in Title II (18)) regulations to be compatible to the maximum extent practical with the approved regulation of adjacent states. This would literally wipe out progressive state strip mine laws such as recently passed in Montana. Again in Section 19B, the bill alludes to basing performance standards on the "relative degrees of environmental protection relative to the costs involved". The criteria of the bill seems to be "as soon as possible". The National Audubon Society finds the loose language of S. 923 unacceptable.

We submit for the record the statements of the Honorable John Dingell from the February 21 Congressional Record on the Administration bill outlining a number of points of contention with S. 923 with which we concur. We would also like to include for the record a copy of a full page ad expressing the views of the National Audubon Society on strip mining. The Society has run the ad in major newspapers in the country.

We appreciate the opportunity to present to the committee our suggestions. Their incorporation in S. 425 will produce realistic, workable legislation to solve one of our nation's greatest conservation problems.

Attachments: 1. List of definitions with regard to NAS proposals.

2. Comments by John Dingell on S. 293.

3. Newspaper ad reflecting Audubon philosophy on strip mining.

ATTACHMENT 1. List of definitions with regard to NAS proposals.

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 mineral.

BENCH means the ledge, shelf or terraces formed in contour method of strip mining.

PERSON means an individual mineral rights owner or holder including their partnership or corporation, federal or state government or agency.

Comment: The mineral rights owner or holder is included in the definition of operators in order to broaden the responsibility for mining impacts and damages on all parties directly benefitting from the mining operation.

MINERAL RIGHTS means any legally recognized interest in mineral resources which permit a person holding such rights to engage in a mining operation.

OWNER OR HOLDER OF AN INTEREST IN MINERAL RIGHTS means any person or governmental agency having an interest in mineral rights and receiving royalities or periodic payments in return for permitting mining operations.

Comment: Possible addition to S. 425 -

MINERAL RIGHTS OWNER OR HOLDER - Holders of interests in mineral rights shall be responsible for any violations of this act, which results from mining operations in the exercise of their mineral rights, regardless of whether such holders have contracted out the right to engage in mining to independent mine operators. Responsibility shall continue not withstanding that the mining operations are inactive when the violation occurs. The mineral rights owners are often the parties determining the timing, sequence, and location of the mining activity.

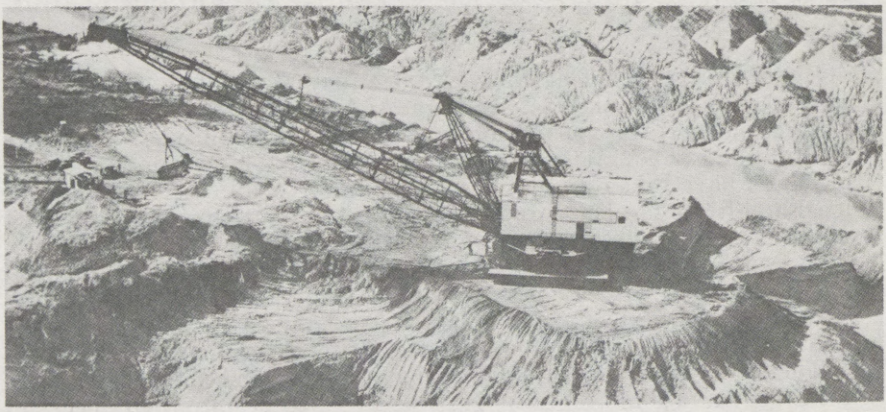
FILL BENCH - on slopes greater than 20°, fill benches will not be allowed.

It is composed of spoil which was pushed over the side of the hill and deposited downslope. Shaped like an inverted triangle lying along the hillside, a fill bench widens the level area or solid bench. A fill bench often causes slides and is a major source of sediment due to its unstable and unconsolidated condition.

Comment: Montana does not allow contour mining. They require a method of operation which does not produce a bench (area strip mining).

CURRENT means within six months of the beginning of the surface mining operation.

The high price of strip-mined coal.



We don't mean the dollars and cents price. We mean the full price. And that includes the crippling payments that strip-mining has been exacting for years from the people and the land of Appalachia: murdered mountains and rivers, lost homes and a shattered ecosystem.

The cost of stripping spreads further than the land surfaces that are ripped apart and swallowed by the giant shovels; it spreads as far as the dust flies, as far as the mud slides down the hillsides to engulf homes and choke valleys, as far as the acid-poisoned streams flow. The cost spreads down the roads and highways that are chewed up by the shuttling trucks. Human effects can be felt still farther away when people driven from their homes flee with their families to the cities where there are no jobs for them.

There are other costs that can accrue when coal is mined in the wrong place or in the wrong way:

Waterways:

Water pours off denuded mountains after heavy rains, flooding creeks and rivers. These may then wash out highways and bridges, leave deposits of silt on farmlands and in reservoirs, smother stream life, and carry life-destroying chemicals into distant rivers and lakes.

Natural Beauty and Human Enjoyment:

When the surface of the land is stripped away anywhere, natural beauty, wildlife, and the enjoyment of most outdoor activities are lost permanently unless the landscape can be and is restored. And in most of Eastern Kentucky—as in much of Appalachia—the landscape is too steep to be restored!

The Ecosystem:

One of the richest and most scientifically valuable associations of plant forms in the entire world is found in the wooded areas of Eastern Kentucky and West Virginia! These lands, now being bulldozed away acre by acre, evolved relatively undisturbed for 50 million years. By-passed by the glaciers, they alone preserved the plant life that later spread out to reclothe the continent when the ice retreated. The only comparable forests are in Eastern China. And only in a few tropical areas are there as many different varieties of plant life. If the rich diversity of plant and animal life in these ancient forests of ours is permitted to be destroyed by stripping, it will be impossible for man ever to restore it!

THE BALANCE SHEET

Great expanses of Appalachia have already been destroyed or degraded for the forseeable future—land that gave mining companies a profit for a few years, but which will now bring little tax revenue, little human enjoyment, little value of any kind for generations to come. The time has come to set the balance straight, to ask: *Is mountain strip-mining worth the price?*

Coal, and the jobs that mining can bring, are important to the economy. But strip-mining creates *fewer*, not more, jobs than deep-mining. When we count up the real costs, the full costs, of strip-mining on slopes that are too steep, the price is far too high.

Even in areas where genuine reclamation is practicable, the land hasn't been reclaimed—in case after case. Therefore, unless there are ironclad, enforceable and enforced guarantees of reclamation, the price of stripping is again too high. Strip-mining companies claim they want to be responsible corporate citizens. Why, then, shouldn't they be made responsible?

America needs coal, yes. But we must use common sense in supplying that need!

It is estimated that of our coal that could be mined by surface techniques, about two thirds lies in areas which *could* be stripped without permanent damage to the environment. (Generally, this is in areas where the coal-bearing slope is less than 20 degrees; there are of course topographical, ecological, geological, and land-use factors to be considered in specific cases.) Such areas *could* be mined in such a way that no damage occurs outside the stripped area during the mining operation, and they *could* be restored to productive use afterward, all at an economic cost feasible for the mining companies and the consumer. But the other one-third should not be touched!

The National Audubon Society believes:

- That strip-mining must be *confined* to areas that can truly be reclaimed;
- That effective controls must be established *during* the mining operation;
- That full reclamation must be enforced *afterward*.

If these conditions are not met, strip-mining will be much more loss than gain and must be stopped!

Write
National Audubon Society

1020 East 20th Street, Owensboro, Kentucky 42301. **Please.**

Mr. PICKELNER. The next witness is Mary Nancy Matisoff of the Izaak Walton League.

STATEMENT OF NANCY MATISOFF, THE IZAAK WALTON LEAGUE OF AMERICA

Ms. MATISOFF. Mr. Chairman, I am Nancy Matisoff, environmental associate for the Izaak Walton League of America.

Since our national convention in 1952, when a resolution was passed calling for a Federal program to control acid mine runoff, league members have taken an active interest in strip mining; working on local and State levels to promote stringent reclamation laws and regulations to prevent serious environmental disruption.

Indeed, league members have walked over high walls, down into shafts, and talked with many State and Federal natural resource experts in an earnest effort to learn the techniques as well as observe and study the effects of the many types of surface mining.

Their understandings and efforts have resulted in some of the toughest State surface mining laws ever passed. Yet, despite their successes in many instances, our members from the coal mining regions of Appalachia report a marked increase in environmental damage per square mile.

It was with the understanding that even stronger steps were needed to prevent increased, social, environmental and economic damage, that the league, in 1972, overwhelmingly passed a resolution calling for prompt congressional enactment of a strong regulatory program which would include as one of its restrictions a prohibition of all surface mining on public lands where mining would impair the nonexploitive values presently enjoyed by the public under the multiple use system.

We appreciate this opportunity to testify on S. 425. The league strongly supports the emphasis given to land use planning in this bill. In too many instances, our members have observed operators mining for shale and leaving coal behind as spoil, because it was more economical to throw coal away than to become subject to the reclamation law.

We believe it is high time that land use planning be given a more explicit role as a management vehicle to insure careful extraction and efficient utilization of our valuable mineral resources.

At the same time, however, the league is concerned that S. 425 does not provide sufficient technical and descriptive requirements to serve as a basis for the development of enforcement of State programs.

The absence of these minimum requirements, in our opinion, will discriminate against operators in States with strong regulations who are compelled to internalize more of the social and environmental costs associated with surface mining operations. The league would therefore recommend the following technical additions.

That each operator circulate copies of his mining and reclamation plans among other State agencies charged with the administration of natural resources such as noise, air, water, recreation, forestry, et cetera, and that these agencies be permitted a minimum of 30 days for comment.

That a sample of the water quality be taken at the nearest point to the mining operation prior to the issuance of a permit and that the results of this sample be recorded at the State office of water pollution control; and that final bond release be contingent upon a finding by the State water pollution control agency that the recreational use for that body of water has not changed.

That no exceptions be granted in requiring the written consent of the surface owner, if different from the applicant.

That no overburden be placed below the elevation of the bench on natural slopes of greater than 14 ° unless the operator can prove the proposed mining method will prevent erosion, acid drainage, or sedimentation.

That operators be assessed an additional $50 for each acre of land to be mined and that these funds be deposited in a special reclamation fund to further assist States in reclaiming orphan lands.

Furthermore, the league is concerned that the bond release provision, which allows partial payment of the bond if certain criteria are met, indicates a reliance upon the fulfillment of reclamation procedures rather than reclamation results.

In our experience, the benefits of backfilling, compacting and regrading have often been completely canceled out in instances where vegetative cover has not survived. In this regard, we believe that an adequate test for survival of a stabilized vegetative cover, particularly where hardwoods are planted, should be 5 years.

In our opinion, no surface operator should be rewarded by a partial fulfillment of a task if the long term objectives stated in his reclamation plan are not also achieved.

The league also questions the unqualified provision in the law allowing an operator to revise both his permit and his reclamation plan. What kind of a permit is it that allows the permittee to abrogate his responsibilities at will?

Moreover, if we are to assume that an operator's reclamation plans have been done in accordance with carefully worked out land use plans for the area, then there should be little reason to change horses in mid-stream.

At the least, we would recommend that the committee will provide specific conditions under which a new reclamation plan might be warranted. Such limitations would also clearly benefit State regulatory agencies who might otherwise be caught up in unnecessary permit reviews and inspections.

As to the constitution and duties of the proposed Office of Land Use Policy and Reclamation, the league fully supports the intent of S. 425 to set up an agency which can exercise independent and objective judgment in implementing the act.

However, even as it would be inappropriate if, for example, a land use agency administered by EPA were to exclude representation from Interior, so, too, does it seem inappropriate that EPA has not been specifically mentioned as a possible agency from which recruitments might be selected.

Furthermore, in listing qualifications for recruitments of this office, the league would recommend that at least some portion of the recruit-

ments have a firm grounding in the social and environmental effects of surface mining as well as a background in State surface mining legislative history and performance.

We believe this would better insure adequate Federal review of State regulations. To this point, we would also recommend that the committee specify in greater detail exactly how the Office of Land Use Policy and Reclamation should exercise its periodic review of State programs.

In this regard, we would recommend that the committee look into the possibility of requiring a quarterly report from each State describing all known violations. Such a provision has been called for in the Water Pollution Control Act of 1972, and, in our opinion, is certain to be one of the most important tools in facilitating both enforcement and in channeling public pressure to recalcitrant polluters.

We believe this provision to be important also as an action forcing tool, particularly since the finding of a violation by the Secretary in this bill is a discretionary act in the law.

The League is concerned by the provision in section 407 allowing the President authority to temporarily suspend for a period of 90 days any of the act's reclamation or mining requirements because of a national emergency of critical fuel shortage.

We are becoming increasingly skeptical of the frequency in which the energy crisis is being used to obscure more fundamental issues relating to the causes of the problem itself. Moreover, we find it difficult to believe that a crisis of the magnitude described in this bill could be alleviated within a 90-day period. We, therefore, strongly urge omission of this section.

In the section-by-section analysis of S. 425, the committee has repeatedly stressed that one of the prime considerations of this legislation be to provide "due process for all concerned parties."

However, we notice that no section of this bill grants any employee of a public agency or of a mining company any protection against discrimination or reprisal as a result of providing information leading to the prosecution of a violator or a suit against the Administrator.

And, yet, for years, threats of shutdowns and of job losses have plagued these citizens in the economically depressed hollows of eastern Kentucky and southern West Virginia.

We strongly urge that the committee consider adopting an employee protection clause much like section 507 in the 1972 Water Pollution Control Act. This provision not only insures protection of injured employees by compensation, it also permits the Administrator to subpena company records so that threatened shutdowns or employee discrimination may be investigated.

The league applauds the many provisions in S. 425 to encourage public participation. It is clear that the committee took great pains to include citizens at every important juncture in the act's implementation.

However, we feel that even these provisions may not be sufficient in instances where regulatory agencies violate or fail to enforce nondiscretionary provisions under this act.

Going on our membership's experience, State failure to achieve adequate levels of reclamation has resulted from much more than lack

of funding, manpower and strong regulations as indicated by CEQ in its recent report on slope limitations.

The additional incentive provided by a citizen suit provision, in our opinion, is one of the only ways to insure that the less visible instances of deficient enforcement do not continue.

Thank you again for the opportunity to comment on S. 425.

Senator METCALF. Thank you very much for your testimony.

[The complete statement of Ms. Matisoff follows:]

STATEMENT OF NANCY MATISOFF, THE IZAAK WALTON LEAGUE OF AMERICA

Mr. Chairman: I am Nancy Matisoff, Environmental Associate for the Izaak Walton League of America. Since our National Convention in 1952, when a resolution was passed calling for a federal program to control acid mine run-off, League members have taken an active interest in strip mining; working on local and state levels to promote stringent reclamation laws and regulations to prevent serious environmental disruption. Indeed League members have walked over highwalls, down into shafts and talked with many state and federal natural resource experts in an earnest effort to learn the techniques as well as observe and study the effects of the many types of surface mining. Their understandings and efforts have resulted in some of the toughest state surface mining laws ever passed. Yet despite their successes in many instances, our members from the coal mining regions of Appalachia report a marked increase in environmental damage per square mile. It was with the understanding that even stronger steps were needed to prevent increased, social and environmental damage, that the League in 1972, overwhelmingly passed a resolution calling for prompt Congressional enactment of a strong regulatory program which would include as one of its restrictions a prohibition of all surface mining on public lands where mining would impair the non-exploitive values presently enjoyed by the public under the multiple use system. We appreciate this opportunity to testify on S. 425.

The League supports the strong emphasis given to land use planning in this bill. In too many instances, our members have observed operators mining for shale and leaving coal behind as spoil, because it was more economical to throw coal away than to become subject to the reclamation law. We believe it high time that land use planning be given a more explicit role as a management vehicle to insure careful extraction and efficient utilization of our valuable mineral resources.

At the same time, however, the League is concerned that S. 425 does not provide sufficient technical and descriptive requirements to serve as a basis for the development of enforcement of state programs. The absence of these minimum requirements, in our opinion, will discriminate against operators in states with strong regulations who are compelled to internalized more of the social and environmental costs assocated with surface mining operations. The League would therefore recommend the following technical additions:

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Furthermore, the League is concerned that the bond release provision, which allows partial payment of the bond if certain criteria are met, indicates a reliance upon the fulfillment of reclamation procedures rather than reclamation results. In our experience, the benefits of backfilling, compacting and regrading have often been completely cancelled out in instances where vegetative cover has not survived. In this regard, we believe that an adequate test for survival of a stabilized vegetative cover, particularly where hardwoods are planted, should be five years. In our opinion, no surface operator should be rewarded by a partial fulfillment of a task if the long term objectives stated in his reclamation plan are not also achieved.

The League also questions the unqualified provision in the law allowing an operator to revise both his permit and his reclamation plan. What kind of a permit is it that allows the permittee to abrogate his responsibilities at will? Moreover, if we are to assume that an operator's reclamation plans have been done in accordance with carefully worked out land use plans for the area, then there should be little reason to change horses in mid-stream. At the least, we would recommend that the Committee will provide specific conditions under which a new reclamation plan might be warranted. Such limitations would also clearly benefit state regulatory agencies who might otherwise be caught up in unnecessary permit reviews and inspections.

As to the constitution and duties of the proposed Office of Land Use Policy and Reclamation, the League fully supports the intent of S. 425 to set up an agency which can exercise independent and objective judgment in implementing the Act. However, even as it would be inappropriate if, for example, a Land Use Agency administered by EPA were to exclude representation from Interior, so too does it seem inappropriate that EPA has not been specifically mentioned as a possible agency from which recruitments might be selected. Furthermore, in listing qualifications for recruitments of this office, the League would recommend that at least some portion of the recruitments have a firm grounding in the social and environmental effects of surface mining as well as a background in state surface mining legislative history and performance. We believe this would better insure adequate federal review of state regulations. To this point we would also recommend that the Committee specify in greater detail exactly how the Office of Land Use Policy and Reclamation should exercise its periodic review of state programs. In this regard, we would recommend that the Committee look into the possibility of requiring a quarterly report from each state describing all known violations. Such a provision has been called for in the water pollution control act and, in our opinion, is certain to be one of the most important tools in facilitating both enforcement and in channeling public pressure to recalcitrant polluters. We believe this provision to be important also as an action forcing tool, particularly since the finding of a violation by the Secretary in this bill is a discretionary act in the law.

The League is concerned by the provision in Section 407 allowing the President authority to temporarily suspend for a period of ninety days any of the Act's reclamation or mining requirements because of a national emergency of critical fuel shortage. We are becoming increasingly skeptical of the frequency in which the energy crisis is being used to obscure more fundamental issues relating to the causes of the problem itself. Moreover, we find it difficult to believe that a crisis of the magnitude described in this bill could be alleviated within a ninety day period. We therefore, strongly urge omission of this section.

In the section by section analysis of S. 425, the Committee has repeatedly stressed that one of the prime considerations of this legislation be to provide "due process for all concerned parties." However, we notice that no section of this bill grants any employee of a public agency or of a mining company any protection against discrimination or reprisal as a result of providing information leading to the prosecution of a violator or a suit against the administrator. And yet for years, threats of shut downs and of job losses have plagued these citizens in the economically depressed hollows of eastern Kentucky and southern West Virginia. We strongly urge that the Committee consider adopting an employee protection clause much like Section 507 in the 1972 water pollution control act. This provision not only insures protection of injured employees by compensation; it also permits the Administrator to subpoena company records so that threatened shut-downs or employee discrimination may be investigated.

The League applauds the many provisions in S. 425 to encourage public participation. It is clear that the Committee took great pains to include citizens

at every important juncture in the Act's implementation. However, we feel that even these provisions may not be sufficient in instances where regulatory agencies violate or fail to enforce nondiscretionary provisions under this Act. Going on our membership's experience, state failure to achieve adequate levels of reclamation has resulted from much more than lack of funding, manpower and strong regulations as indicated by CEQ in its recent report on slope limitations. The additional incentive provided by a citizen suit provision, in our opinion, is one of the only ways to insure that the less visible instances of deficient enforcement do not continue.

Thank you again for the opportunity to comment on S. 425.

Senator METCALF. Mr. Pickelner.

Mr. PICKELNER. Our final statement will come from Richard Pardo.

STATEMENT OF RICHARD PARDO, PROGRAM DIRECTOR, AMERICAN FORESTRY ASSOCIATION

Mr. PARDO. Mr. Chairman, I am Richard Pardo, programs director for the American Forestry Association.

We are a national conservation organization based here in Washington with a membership of more than 70,000 men and women across the country and a 98-year history of conservation activity.

Since I hope my written statement speaks for itself, my remarks this morning will be very brief.

We believe that a strong bill is needed. We feel that either of the bills under consideration here would be a great step forward. However, of the two, I believe that S. 425, as now written, is preferable in that it is more specific and seems to promise a more positive Federal commitment to solving the problem.

Judge Crane testified on the opening days of this hearing that the administration bill is also a strong one. In any case, we hope that the best features of any of these bills can be combined into the best possible strip mine control law.

Our written statement, on page 2 and 3, contains what we believe are the major provisions which should be included in such a law, and I will not go over them again now.

Second, we feel that serious consideration should be given to enlarging the standard-setting and enforcement provisions of any strip mining program in the Environmental Protection Agency rather than the Department of the Interior.

Surface mining control is clearly a matter of environmental protection first and foremost. EPA was created and is designed to administer just this type of program; whereas, Interior is a land management agency, better equipped perhaps for the land use program envisioned by S. 425. We feel enforcement is primarily a job for an EPA-type agency.

Third, in my statement I touch briefly on forestry aspects of unregulated surface mining. I would like at this time to add two points. When considerations are made regarding areas which should not be strip mined, we would hope that the scenic and recreational qualities of the residual forest stands will be weighed in the balance along with the economic factors such as potential loss of timber growth, because we believe that esthetics are very clearly a large part of forestry, too.

Second, at the National Tree Planting Conference in New Orleans last fall, it was estimated that close to 75 million acres of land in this

country are in need of reforestation; either establishment of forest stands where none exist now, or else the planting of trees where stands are understocked.

With a backlog of that sort facing us, we cannot afford to add even one more acre of unreclaimed surface mined land to the total. Therefore, we very strongly support strong reclamation provisions and enforcement with strip mining.

Finally, as with any of our current environmental problems, there is also a need for more research for improved mining and reclamation technology, and for a commitment by the public to pay the full cost of environmental protection programs.

In summary, Mr. Chairman, we commend you and the committee for giving this matter high priority in this first session of the 93d Congress, and urge that you continue to press for early passage of a surface mining bill.

You have our full support. Thank you.

Senator METCALF. Thank you very much.

[The complete statement of Mr. Pardo follows:]

AMERICAN FORESTRY ASSOCIATION
balanced forest use

98th ANNUAL MEETING
OCTOBER 7-10
WHITEFACE INN
LAKE PLACID, NEW YORK

Founded 1875 1319 Eighteenth Street NW Washington DC 20036 telephone (202) 467-5810

March 16, 1973

MAR 20 1973

The Honorable Lee Metcalf, Chairman
Subcommittee on Minerals, Material and Fuels
Senate Committee on Interior and Insular Affairs
New Senate Office Building
Washington, D. C. 20510

Dear Senator Metcalf:

The following is in response to your request for a brief description of the membership of the American Forestry Association for insertion in the record of the March 13-15 hearings on surface mining legislation:

> The American Forestry Association is a national conservation organization -- independent and non-political -- for the advancement of intelligent management and use of our forests, soil, water, wildlife and other natural resources. Membership, which currently stands at 70,650, is open to anyone with an interest in forestry and resource conservation. Membership is distributed approximately as follows: Eastern states, 31,300; Central states, 25,500; Rocky Mountain states, 3,400; Western states, 10,500.

Also, at one point in the hearing, Senator McClure asked for any additional information we might have on the subject of consent, compensation, etc., regarding the owner of surface rights. We have no material to submit, but agree with Senator McClure that this issue involves some extremely complex legal questions. Of course, the legal rights of the owners of the mineral estate must also be protected.

Sincerely,

Richard Pardo

Richard Pardo
Programs Director

rp:dn

STATEMENT OF THE AMERICAN FORESTRY ASSOCIATION

before the

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

on

S. 425, the "Surface Mining Reclamation Act of 1973"
and
S. 923, "The Mined Area Protection Act of 1973"

Washington, D. C.
March 15, 1973

Mr. Chairman:

I am Richard Pardo, Programs Director for the American Forestry Association. We are a national conservation organization based in Washington, D. C., with a membership of more than 70,000 men and women across the country and a 98-year history of conservation activity. We appreciate the opportunity to present this statement on S. 425 and S. 923.

Whether or not we are in a "crisis" for energy, the energy needs of the country will continue to grow. Coal is easily our most abundant energy source. According to a recent report of the National Petroleum Council, there are some 3.21 trillion tons of coal within the United States. Of this, approximately 150 billion tons are recoverable using current mining technology. And of this amount, 45 billion tons are capable of being surface mined. Obviously these reserves of coal near the surface will be the primary target for mining.

If past experience is any guide, the environmental and social costs of surface mining have been higher than we've ever been willing to admit or been willing to deal with. We can no longer afford to ignore these costs.

The first question to be faced when dealing with the subject of surface mining is should this type of extractive process be totally banned? The bills being considered here today do not take that approach, but instead seek to allow the practice to continue under stringent environmental safeguards.

We are not yet convinced that a complete prohibition of all surface mining is the answer. All the evidence as to the social and economic effects of such a ban is not yet in.

But whether or not a total ban is eventually passed, there is ample evidence at hand to convince us that action is needed now to bring surface mining under much closer control than presently exists.

There is a need to set performance standards for the mining operations themselves; standards that will assure minimum environmental impact wherever surface mining occurs. There is a need to set mandatory reclamation standards and to enforce these standards. There is a need to identify those conditions under which surface mining should be prohibited for reasons of unacceptable environmental costs.

We do not need further evidence to show us the disasterous consequences of expanded and uncontrolled surface mining.

Therefore, we believe that the purpose of legislation should be neither to prevent all surface mining nor to put the Federal or State governments in the mining business. The goal must be to see that steps are taken before, during and after surface mining to minimize the adverse economic, social and environmental aspects of the operation.

Passage of either S. 425 or S. 923 would be a giant step in that direction.

We feel that whatever final form is taken by Federal legislation in this field, it should contain these provisions:

1. That States must within a stated time limit, develop programs of surface mining regulation, reclamation and enforcement.

2. That the Federal government develop national standards to which state programs must adhere.

3. That with few exceptions, all surface mining operations be subject to State or Federal permit programs which will spell out operating procedures and require sound reclamation provisions.

4. That in case of failure of States to develop adequate programs, the Federal government should be empowered to step in and promulgate the needed programs.

5. That steps be taken to identify lands which cannot be successfully reclaimed, and that surface mining be prohibited in such areas. (This is of critical concern in the more arid areas of the West - not yet disturbed - where reclamation may be impossible.)

6. That where slope conditions exceed twenty degrees or more, the burden of proof that operation and reclamation can successfully be done rests with the operator seeking an operating permit.

7. That provisions be included to assure ample public notice of proposed surface mining operations and adequate opportunity for the public to express their views during the permit-granting, decision-making process.

8. That adequate access to the courts be provided at all stages of the rule-making and permit-granting processes.

9. That owners of surface rights be protected against loss of their property without adequate compensation.

We also fully support the purposes of Title III of S. 425 relating to the rehabilitation of abandoned and unreclaimed mined areas. These areas represent an environmental debt that is long overdue. Although the debt cannot be paid overnight, the longer we wait, the more we will lose in unproductive idle land. Title III should be enacted.

We believe that the standards and enforcement programs of S. 425 more properly belong within the Office of Environmental Protection, rather than the Interior Department. There is no reason that administration of the act under EPA cannot be subject to environmental impact requirements of NEPA, even though other EPA programs, such as the water pollution control permit program may be exempt. (Even at that, I believe that the permit program exemption is only temporary.) EPA has shown that it can open its decision-making process to the public as well as any Federal agency, and better than many. And Interior is no more free from the constraints imposed by OMB than is EPA.

The argument that a mission-oriented agency such as EPA cannot properly weigh and balance non-environmental costs and benefits seems weak. The question is, can the administering agency administer the law under which it is operating? EPA has shown that it can do the job.

As for EPA's lack of land-use planning functions, we believe that this can be coordinated with the land-planning agencies without greatly hampering the operation of a surface mine act. As an alternative, the land-use functions can be lodged in Interior. And if EPA is already overburdened, the answer is to provide them with the men and manpower. These things can be provided to EPA as easily as to the Department of Interior.

Not much has been said about the effects of surface mining on forestry. As far as I am aware there have been no statistics compiled on the acres of productive forest lands which have been destroyed by failure to reclaim surface-mined areas. Nor has anyone put a value on the loss of growing stock which has occurred when still-young, unmerchantable trees have been stripped from land being mined.

However, I don't think we need to get down to precise statistics to realize that we cannot afford to heedlessly squander any of our valuable tree growing potential. Recent surveys by the U. S. Forest Service indicate that we must look to the small non-industrial private forest holdings, primarily in the Eastern United States, for any significant future increase in forest productivity. Many of the lands being strip-mined today are in this category of small ownerships.

To clear these lands for mining is one thing. At least the present merchantable timber volume can presumably be utilized. But unless mining is followed by reclamation, we have destroyed the forest, perhaps forever.

It is conceivable that given the proper reclamation, mining could even enhance forest productivity. Too many acres of small private woodlands now support little more than brush and low value scrub growth. Owners of the lands do not have the money needed to rehabilitate the land for growing trees. Under the right circumstances, surface mining could provide the funds needed to put this land back into forest production following mining and reclamation.

But let's face it. We are a long way from that sort of mining operation in most instances. So until performance and reclamation standards are improved and enforced, forestry will continue to suffer along with most other resource conservation programs where surface mining is involved.

In summary, therefore, Mr. Chairman, we believe that a national program of surface mining performance and reclamation standards is badly needed. Primary responsibility for the administration and enforcement of the programs should rest with the individual States. However, there must also be strong Federal support and back-up capability in the event that the States fail to carry out their responsibilities.

As with any of our current environmental problems, there is also a need for more research, for improved mining and reclamation technology, and for a commitment by the public to pay the full cost of environmental protection programs.

We commend you, Mr. Chairman, and this Committee for giving this matter high priority in this First Session of the 93rd Congress, and urge that you continue to press for early passage of a surface mining bill. You have our full support.

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Senator METCALF. Before I call on Senator McClure, may I urge that all the witnesses in your panel, Mr. Pickelner, present a brief statement of the membership—how many members you have, where you are located in the various States, and so forth, as a preface to your statement, so that the record will show the organizations and the influence and spread of your memberships that you have, when we read it.

Most of us know and have worked with you over the years, but the printed record will be very important. Just a brief paragraph.

Senator McClure.

Senator MCCLURE. Thank you very much, Mr. Chairman. And, I appreciate the presentation made by the panel. I think that without any question, without any unnecessary criticism, I think reading the statements would indicate that maybe you have been talking to each other, because you all make some of the same points, and I think that is a very healthy activity when you do make your points as you have in concert.

I am struck by one thing that appeared in the environmental policy center statement. It was a privilege for me to hear you, come back before the committee on which I assist, Louise, and present your constructive comments because I know you were active last year as we were working on strip mine legislation.

And, for those who may not know it, she was by the office almost everyday. It's very helpful to have that kind of assistance because it makes the job easier.

Would you agree that the legislation with respect to environmental concerns in strip mine rehabilitation should be addressed more to the goal to be achieved than the means by which it should be achieved.

Ms. DUNLAP. Well, Senator McClure, you have not disappointed me in asking a very tough question. I think that in discussing the minimum criteria listed in our statement, which we would hope to be, at a minimum, criteria in a Federal law that would serve as a basis for promulgation for regulations, that the goal should be the condition of the land required to be maintained during the mining operation, and the condition to which the land should be returned following the mining operation that we are setting forth this criteria.

And, the intent in setting forth specific criteria is to also allow maximum flexibility for the operator who should bear the burden of proof, when he applies for a permit, to take it upon himself and to show some initiative and incentive in coming up with the most efficient, economical way of carrying on that operation and still complying with the criteria. But, specific criteria are essential if the public is to be protected.

I think that in the debate so far before this committee and this Congress, that many people are confusing specific criteria with an attempt to tie the hands of operators into certain mining techniques. That is not the case. The surface mining is to be allowed to all the industry and the public needs to know very precisely the requirements to insure environmental protection.

Senator MCCLURE. I appreciate that statement, and it appears in somewhat different form in your prepared text on page 3, in the second full paragraph. I think it is a useful addition to the commentary as we try to write up a bill because I think, as you have ex-

pressed it, that criteria should be directed not only toward the operating methods, but also the goals to be achieved, and we ought to be more concerned about what the results are than the methods.

That is a point which the mining operators have also made, if we will clearly tell them what we expect of them to achieve, and give them a little bit of flexibility on how to achieve it, then perhaps we can share common goals.

Ms. DUNLAP. If I may add one thing. I think that so long as the information required on a permit application is very specific, and so long as the operator bears the burden of proof in demonstrating that what he is proposing can and will be accomplished, that the operator probably should be allowed that flexibility to which you refer.

Senator MCCLURE. Again, on page 3 of your statement, in the last paragraph, you are talking about minimum requirements, the first of which is to "remove, segregate and preserve top soil."

It has been suggested that there are occasions when the surface soil may be less appropriate for rehabilitation of vegetation than some other strata. In those circumstances, there should be sufficient flexibility to allow them to improve the surface, should there not?

Ms. DUNLAP. I think it could easily read, "preserve topsoils and subsoils to achieve the stated quality or the goal of the quality of the soil after the mining process.

Senator MCCLURE. I suppose we might adopt, as a kind of rule of thumb, that we expect the topsoil will be the best growing medium and it should be replaced, unless it is affirmatively shown that some other method would be better. Would you agree with that?

Ms. DUNLAP. Yes. Sometimes, however, integrating the subsoils with the topsoil is better.

Senator MCCLURE. I would like to refer to page 4, particularly item No. 4 and No. 5. It seems to me that you made a very good statement with respect to mining on steeper slopes.

You haven't said it can't be done, but you have pointed out that there are dangers involved, that the burden ought to be on the applicant to show that he can do it and do it properly in those circumstances. I think that kind of differentiation between circumstances and burden of proof on the applicant may be well stated.

Ms. DUNLAP. I am sure you remember last year in the House debate this particular requirement was not supported by the industry. Yet, I know a lot of environmentalists felt that too much generosity had been extended to the industry through such flexibility.

Senator MCCLURE. Yes. I remember that very well.

In item No. 5 on page 5, you have indicated that depressions to hold water should be eliminated. Yet, in some instances, rehabilitation of lands lying to the west, it has been found beneficial to have some catchments to preserve enough water on the slopes so that we could at least get some regenerated vegetation.

Would a similar provision be appropriate here, that, as a kind of rule of thumb, that we don't want any problems with water? However, it can be shown, that if necessary or beneficial that it could be permitted.

Ms. DUNLAP. Yes. So long as the burden of proof was on the operator and he could affirmatively demonstrate that following public hearings prior to permit approval, the proposed treament of water was within

applicable State water pollution laws and so forth, and the existing as proposed local land use policy.

Senator McClure. I mentioned that because we do have some experience with reclamation of spoil banks and some of the arid lands in the west where this kind of water has proved to be beneficial in aiding the reestablishment of vegetation on these slopes.

Ms. Dunlap. This reference, in No. 5, does, however, point to the problem on slopes greater than 14° and I think that might be a different type of depression and collection of water than on lands that are under 14° where these would be a different situation.

Senator McClure. Finally, in your statement, as appears in every one of the others, I think in your statement on page 5, item No. 15, in Mr. Borrelli's statement on page 4, in another statement on page 14, the Izaak Walton League statement on page 3, and, again, Mr. Pardo's statement on page 3, the desire to require the operator to have the written consent of the surface land owner, even though there may be a separation in fee between the holder of the surface rights and the subsurface mineral rights.

I might just say this to all of you since it is a common theme in all of the statements. Have you determined whether that is legally and constitutionally possible?

Ms. Dunlap. I don't want to entirely repeat your colloquy with Mr. Preate on that point. But, I do think there may be some legal question as to its applicability in a Federal law as written here. I think, however, that it should not be ruled out by the committee, that the committee should look into those States which do recognize this. I believe Pennsylvania and Colorado do.

And, I think it is possible for the committee, in its legislative intent, and, in fact, in the language of the bill, to, as much as possible, provide for written consent of the surface owner, perhaps allowing exceptions where ownership is uncertain. My drafting perhaps is not as articulate as it should be. I don't think you should dismiss this issue in the debate because I think that is an important point to have the committee consider.

Senator McClure. I don't dismiss it at all. It's just that it seems to me we are involved in a very tough, legal situation of where there has been a separation of title between surface and subsurface rights, and, in effect, you are either requiring, as it is suggested, I think, in your statement, Ms. Matisoff, that there should be compensation paid when, indeed, compensation probably was paid at some time in the past for the subsurface rights.

Are you then taking property without a due process of law?

Ms. Dunlap. Another problem may exist where you have other minerals intermingled with coal. There are cases where the owners of the surface owns the mineral rights to some but not all, and you run into legal problems when a permit applicant comes forward possessing the mineral rights for one mineral and the surface owner who owns some other mineral rights, is not anxious to give his written consent. So, it could work both ways.

Senator McClure. I am sure the surface owner is not very anxious in any instance to give his consent to something that will destroy the value for which he is holding the title, even if it is only on a temporary basis, and particularly where the subsurface rights are severed

from the surface rights and fall in the hands of a prior owner, because there is no benefit to the present owner at all.

I think we do have a very difficult position here. Perhaps a better way of asking each of you to comment on this question at this time would be if you have additional comments which you can submit to us bearing on this question, I, as one, would certainly appreciate it because I think that may be one of the most emotional, one of the most technically difficult and potentially one of the most troublesome portions of the legislation.

Ms. DUNLAP. Another aspect of that legal dispute, I believe, is that it is interpreted by some that denial of written consent by the surface owner constitutes a taking. On the other hand, I believe it has also been determined that it is not a taking but constitutes a regulation of the land use of the surface, and does not preempt necessarily the owner of that mineral right from extracting that mineral by other mining methods.

Senator MCCLURE. I think in many instances the past practices have been more disruptive of surface rights than they need to have been, and that is one of the things we are looking to.

Ms. DUNLAP. Well, surface owners with good reason are being more cautious these days, too.

Senator MCCLURE. I think one of the statements, yours, Mr. Pardo, had a very good statement about approaching these with caution, on both sides, I might add, some of these problems.

Mr. Pickelner, I am a little concerned about the absolute statement, which is on top of page 2, which says we have to, in every instance, we have to control all erosion, manage it so as to control all erosion and limit all adverse effects to the area under permit.

There are adverse effects in building highways, and certainly, if I own a piece of property that is traversed by a highway, I would require that they eliminate all adverse effects and that would mean they can't build a highway across my property.

But, we, as society, require that we have transportation just as we, as society, require that we have minerals. How can we in every instance eliminate all adverse effects?

Mr. PICKELNER. Taking that to an extreme, Senator McClure, we can't eliminate all adverse effects. But, this was written in response to the statement contained in the administration bill which I quoted earlier in the paragraph, "to encourage a nationwide effort to regulate mining operations to prevent, or subsequently reduce their environmental effects."

I think any bill should go much further than the statement of saying, "this substantially reduces environmental effect," and maybe limiting all adverse effects is an extreme to the other side; maybe it's a happy medium that should be met.

Senator MCCLURE. Maybe there needs to be qualifying language to the effect, as far as possible, as far as practicable, as far as reasonable, or reasonably possible. We have debated all of these defining terms, and eventually you have to settle on something, even though every one of them leaves something to be desired.

You have criticized, too, the public participation of the proposed State regulation. Will not the public have an opportunity to participate in the promulgation by the State plans and regulations, and is it

necessary to have public participation again at the Interior review level?

Mr. PICKELNER. Again, Senator McClure, we are contending that there can't be too much public participation.

Senator MCCLURE. You are also opposed to the idea of delay, and yet public participation implies delay.

Mr. PICKELNER. Not always does it imply delay. Although there is some delay in the promulgation of the regulations that the Environmental Protection Institute is supposed to put out, the public participation has enhanced or helped them as far as getting regulations which are acceptable and will do the job.

Senator MCCLURE. I want the public to participate, too, but not to the point of having public participation make the administration so cumbersome that it can't be effective. I don't think you want that, either.

Mr. PICKELNER. Again, sir, we are going from one extreme to the other; whereas, now, most of the decisions are made behind closed doors and the public doesn't find out about them until they are published in the "Federal Register."

Senator MCCLURE. That's assuming that they read the "Federal Register."

Mr. PICKELNER. And, there are few that understand it when they do. The more we can pump them into the process from the beginning, I think the better off we will be.

Senator MCCLURE. I agree with that. And, I guess what we are seeking is what is the appropriate balance in most of these things.

Mr. Borrelli, in your statement, it seems to me you have come close to expressing the ambivalence that so many of us have. On page 2, you say, "stop now." On page 3, you say, "a gradual phaseout." Other places, you say, "unless we can do certain things that ought to be stopped." In other places, you say, "if we do certain things, we could do it differently than we are doing it now."

I am not sure that I really understand whether you mean stop strip mining or phase it out or gradually shift into something else or create the conditions under which we can continue it.

Mr. BORRELLI. You are correct, Senator, in noting that there is an ambivalence here. We are of the opinion that without a major change in a great many of our national policies that we are not going to be able to satisfactorily control the adverse effects of strip mining with the kinds of legislation presently pending.

That is not to say that we cannot legislate the problem or that we cannot plan and manage the land, but far more is required than the simple passage of an act that, in our opinion, would continue to foster strip mining in this country.

Let me illustrate this point to one extent. I don't believe that it is overstating the case to say that the presumption of this legislation and the legislation introduced by the administration is that strip mining should continue and that strip mining should continue to represent the portion of total production that it presently represents.

To a certain extent, the presumption is that of the Mineral Policies Act in 1970. I think a strong case can be made against that presumption, and I believe that the Congress has both the power and the authority and the opportunity at this time in passing legislation in this field

to make some presumption about the future balance of mining techniques in this country.

It was noted in earlier testimony, I believe, on the first day, that the balance between underground mining and strip mining and other countries to which various comparisons have been made, is much smaller than it is in this country; 10 percent, in several countries, 20 percent.

Strip mining in this country now represents over 50 percent of the U.S. coal production. There is no reason to believe that even with the passage of this act it would not continue to rise on that expediential curve that has appeared in all the documents before you.

We believe that without some radical changes in both land-use policy law and energy policy, that the Congress has the power and the responsibility and the opportunity to take, that passage of this legislation or legislation similar to it will not have the effect of curbing the growth of strip mining, which we believe should be a concern and a priority of the Congress in considering such legislation.

Senator McCLURE. I think you are asking us to make a presumption at the same time that there is no way in which we can find or no legislation that we can pass which will adequately rehabilitate strip mined areas, and that, therefore, it is a bad practice.

Mr. BORRELLI. Not necessarily. If you will notice the note in the latter half of our testimony, beginning on page 6, and continuing through page 17, we lay out a course of action, a legislative course of action in the form of amendments to S. 425, actually in the form of creation of a new piece of legislation that would, to a certain extent, not perhaps totally to our satisfaction, but would, to a certain extent, balance the regulation and control of surface mining with land use planning law with some concerns about energy balance, with sufficient environmental safeguards to allow a continuation of the practice.

I will be the first to admit that, in my judgment, even such legislative action as is proposed in these pages, would perhaps still not address itself to what I believe the Congress must, as a policy question, ultimately address itself to, and that is the balance between not only the locations of mineral extraction in the United States, but the method by which the extraction is accomplished.

And, I don't believe this legislation or any of the deliberations of either the committee of Congress nor even the President's Council on Environmental Quality's reports to this committee address themselves to it.

The CEQ report, for example, addresses itself to several very specific questions put to it by this committee. "What would be the effect," the committee asked, "if we abolished strip mining above 15° and above 20°" and they answered that question.

To the best of my knowledge, with respect to the empirical data they have come up with, that question has been answered as honestly and fairly as anyone can at this point in time. But, they also went on to note in their own study that the local dislocations, both economic and social, and employment dislocations that they referred to and that they documented did not take into consideration broader policy questions such as the availability of coal and other forces of the country, or perhaps the long-range objective of the Nation and moving in terms of coal——

Senator McCLURE. If I may interrupt, because I am sure when you start talking about all of the interacting factors that bear upon these policies, I agree with what you have said, that CFQ did not address that in response to these questions.

I would submit that you haven't given us a definitive answer, either, and I don't know that anyone has. You have suggested problem areas, and you have suggested that Congress ought to come up with an answer. But, precisely what answer? I don't think anyone has come up with that answer yet.

I applaud the efforts of people to raise these questions, and I think it is valuable to ask this committee and to ask the Congress to consider these things. But, if you have been unable to come up with a definitive answer of what all these policies should be and their myriad of interrelationships, then maybe it is a little extreme to expect that we are going to be able to right that at this time.

Mr. BORRELLI. I understand, and I share the concern of the Federal Government, and certainly the environmental community, as a whole, in struggling with this problem of arriving at rational energy policies and other policies to redirect this Nation.

I merely want to make the point that until we have answered these questions, any regulations such as that being considered by this committee or other committees of Congress is, to a certain extent, a deception. Let us not call this legislation in the environmental bill. Let's consider it.

If we do not have the answers to the legitimate questions being raised and the concerns that you, Senator, express, if we don't have the answers to these questions, let's continue to work toward answering them and pass what legislation is necessary to allow life to exist and to allow production to continue.

But, let's not do it in the name of environmental protection. This is not an environmental bill, in our opinion.

Senator McCLURE. Your logic escapes me completely. You say because we cannot find the final answer, therefore, it is no answer at all?

Mr. BORRELLI. I am not saying the final answer. I don't believe that this committee, as you well know, and you have a great concern, this committee is presently also considering passage of national land use planning legislation. Our belief is that strip mining is a major land use, and should be coordinated directly with land use planning legislation. That's not pie in the sky; that's not 50 years away.

Senator McCLURE. Don't you contend, though, that the land use planning bill we are apt to pass here is a deception because it cannot be the perfect bill?

Mr. BORRELLI. In and by itself, that may be the case. I am of that opinion, however, that there are a number of States, if that land-use planning legislation is passed today, that there are a number of States that have the machinery and legislative authority to put it into work in a way that would have a direct and positive effect on the environmental control of strip mining.

Senator McCLURE. A positive effect, then, would be an environmental bill? Well, don't answer that. Because, if it is, indeed, as you suggested, therefore, an environmental bill then so might this be, even though it's not the total, perfect, and final answer.

I don't mean to cut you off, but I do want to get on to some other areas, and perhaps we can continue this discussion when we both have more time.

On page 5 of your statement you introduced that "we believe the costs to the consumer will only be marginal." If the cost of reclamation runs up to a dollar a ton, as someone suggested, that could be from 20- to 35-percent additional cost of the commodity recovered in any coal field. That's hardly marginal, although that's only a part of the cost that goes into the finished product that the consumer pays.

Certainly, there is no way that we can ever come out with just an average cost because the cost of recovering, the cost per acre and the cost per ton, the amount of energy that goes into the finished product that is consumed by the consumer; that it is not a fair question to ask that you come up with an average cost.

But, I think maybe there needs to be stated here that the environmental costs, in economic terms, passed on to the consumers will be a lot more than marginal. This is not to say that it shouldn't be recognized and shouldn't be merged, internalized, and merged into the final cost of the product. But, let's not fool the customer that they are going to get this cheap or free.

Mr. BORRELLI. Senator, we will, for the record, introduce some statistics in this regard. We do believe the cost is marginal.

As you recall, on the House floor last year, when you were still a member of that chamber, Representative Wayne Hays from Ohio, who was the sponsor of H.R. 6482, and one of the early sponsors of strip mine legislation in Ohio, stood up on the floor of the House of Representatives and introduced arguments indicating that the cost to the consumer had been marginal in his State.

Nevertheless, Mr. Franson has with him this morning some reclamation costs that can be translated into cost to the consumer. I know that Mr. Hagen yesterday, in his testimony before the committee, introduced data that also suggested marginal cost to the consumer.

And, we will again continue to——

Senator MCCLURE. Would you please, and introduce it into the record for our use? This is only one of several costs that is being asked to be internalized, and a combination of all these costs is going to be substantial.

I think we ought to be telling the people of this country that we expect it to be more than just marginal, because I think the people of this country are big boys and girls and are entitled to know what the facts are. They will make the right decisions if we give them adequate information. I think if they have an adequate knowledge of what the tradeoffs are, they will support the additional costs.

But, let's not trap ourselves into destroying the credibility of the environmental movement by promising them that you can do all these things with no cost to them. We've come very close to doing that already in air pollution control where you are talking about emission control devices on automobiles.

And, right now, the public reaction in some places, such as Los Angeles, faced with the necessity of gasoline rationing to meet air pollution control emission requirements during periods of the year are beginning to say, "the environmentalists didn't tell us the truth," and, indeed, we didn't tell them the whole truth.

When we promised the people there would be a fuel penalty for the emission control devices and their actual, practical knowledge in driving the new automobiles indicates a much higher fuel penalty than that, they say, "you lied to us," and, indeed, we didn't tell them the truth.

Now, they are entitled to the truth so far as we can give it to them so they can make their own judgments. That's all I'm asking. I am not asking that we say that "this is going to drive you out of business," or that "you can't possibly pay these costs."

But, a responsible member of the utility industry predicted that in 10 years the average family's electrical bill will be $100 a month partly as a result of environmental constraints, partly as a result of the shortage of energy fuels which will drive costs up.

That is the kind of statistic that the people of this country might well be confronted with, and we'd better be addressing ourselves to in very real terms, and that is why I am anxious to have you put into the record the statements and projections that you have so that we can evaulate that, and so that the public can evaluate that.

Mr. FRANSON. If I can interject at this point, I will insert this into the record, and I think it substantially indicates that costs of reclamation are not as great as many people fear. This is a table from the Cincinnati office of the Environmental Protection Agency. It has not been made public yet, but it also involves the costs of reclamation in Montana, so I think this will be of particular interest to you.

Senator METCALF. We would be glad to have that material in the record at the appropriate point, and any additional material, Mr. Borrelli, that you wish to submit will also be incorporated.

Senator MCCLURE. Thank you, Mr. Chairman.

Do I understand, Mr. Borrelli, that the Sierra Club is opposed to legislation covering all mining?

Mr. BORRELLI. As you note in our testimony, we question the wisdom of such legislation at this time, though we are not in a position to voice a yea or nay opinion.

I think that certainly is in the environmental interests of the country to have uniform, consistent Federal legislation applied to all minerals and all forms of mining. Our particular concern, and one that I think you can well appreciate from the experience last year in the House is that such legislation, one, either might not be passed, or, two, watered down to such a great extent in an effort to pass it——

Senator MCCLURE. I hope you will forgive me if I say that when you say you are not for it or against it, you just question the wisdom of trying to do it, but you really think we ought to, you are indulging in the same kind of fantasy that we sometimes do when we say, "I want to vote (yes, but,) or (no, maybe.)"

Mr. BORRELLI. As you know, last year we supported on the House side the passage of 6482 as a surface mining coal bill. We fell that that is the major concern of environmentalists today with regard to strip mining, although there are, of course, many other forms of strip mining and many other minerals involved as well as other mineral extractive processes which we are all concerned about.

The primary focus of the Congress, we believe, should be coal strip mining, and if the Congress has the votes, shall we say, to cover all

bases with stringent controls, you can count on the support of the conservation community.

But, if you are in the process, and in an effort to cover all bases with one fell swoop the legislation is gutted, you cannot have the support of the conservation community.

Senator McCLURE. I think I understand your point. And, as Louise knows from our discussions last year, I am much in favor of legislation that covers all the surface aspects of mining and all the environmental aspects of mining, surface or subsurface, whether it be strip, open pit, or some of the other methods used and alternatives.

And, I might point out that that is something that has not been discussed yet, some other methods by way of percolation of acids, things that we haven't even touched on, and I think we should touch on them. But, I'm like you, I'd rather pass a noncomprehensive bill than none. But, I think we can pass a comprehensive bill, and I think we should in fairness to the people of the country, and in fairness to the mining industry.

On page 14 of your statement——

Senator METCALF. Did you want to respond to that question?

Ms. DUNLAP. If I could.

I think that as the debate becomes more refined in the Senate on the coal and other minerals bill, that more and more of the criteria and performance standards that you will be looking at in your bill will more and more reflect a relationship to the land area affected, and in some cases where there are real exceptions, due to the mineral or the body of ore, there may be special provisions written in.

But, as legislation expands from one mining industry, coal, as we had in the House, to coal and other minerals, as we had in the Senate, I think that there will be more of a shift in the type of Federal criteria that is set, focusing more on the condition of land than on a specific mining process.

With open pit, for instance, in S. 425, there are some problems with the way that is currently drafted, and that will have to be rewritten, that being a mining process that could cover many different minerals. But, it is a mining process which is different from the more horizontally disruptive process of surface mining——

Senator McCLURE. No question of that. And, just as strip mining for coal in the steep country has different environmental problems than that in flat terrain, just as strip mining for coal in areas of heavy rainfall has different consequences than that in the arid West, just as strip mining for coal has a difference when it is a 3-foot seam as compared to a 200-foot seam, there are overlappings that do not simply confine themselves to the commodity being recovered.

It seems to me, we should look, instead, to the environmental effects of the method of mining, rather than what is sought to be recovered. When we do that and we make—the flexibility that is required to reflect the differences that are already there in strip mining for coal, we will also have built in the flexibility that makes it applicable to all other types of mining. If we don't build in that flexibility, with respect to coal it is going to be an unworkable statute.

I think we have tried to say there is a simplistic solution or simple problem on strip mining, and it is much more complex. I hope, before

we finish, we will have written a comprehensive statute; that we will not have fallen into the trap, which Mr. Borrelli was afraid we might, in trying to do more than we could do and ending up doing nothing.

On page 14, Mr. Borrelli, in item No. 5, dealing with the disposal of materials downslope, and I tend to agree with you that on steep slopes there is no way you are going to reclaim the slope if you throw materials down the slope.

But, I wonder why you felt that it was a place to—why you put in there the abandoned or disabled equipment?

Mr. BORRELLI. Quite simply because in Appalachia, anything that responds to the law of gravity goes over the side of the slope, and very often this is abandoned equipment.

Senator MCCLURE. But, it's very easily picked up afterwards, isn't it? I think the law requires it. Whereas, throwing rocks and soil down the slope makes it very difficult.

Mr. BORRELLI. I think the language of point 5 on page 14 is "abandoned or disabled equipment." Now, perhaps with regard to disabled equipment, there could be some flexibility. But, certainly, with the abandonment of equipment, there is no question as to the intent.

Senator MCCLURE. But, you say "temporarily or permanently," and it seems to me that while there is a difficulty inherent in throwing soil materials downslope temporarily and then attempting to get them back, there is not a similar difficulty in having materials or equipment—equipment or materials down the slope temporarily.

Mr. BORRELLI. I would think in any statute of this nature there would be provisions, opportunity for the operator to apply to the administrator for some special circumstance, if his dragline has to be moved down a slope for some reasonable purpose. But, more often than not, we find these pieces of equipment tumbling down the mountainside, falling through people's homes. I've seen abandoned tractors and equipment sitting in graveyards in the hills of West Virginia and Kentucky, and this is the reason for this concern.

Senator MCCLURE. I wanted to make just a couple of comments in closing here. One is that there is a conflict on one point, the reason I asked one of the earlier questions. Some of the statements indicate that the method of operation is of prime concern, while others indicate that the goal is the prime concern. And, it seems to me we need to keep that clearly in mind as we go through.

The other is the statement by Mr. Pardo in regard to utilizing some of these areas for production of timber, the timber resources. This gets into a different area completely as we get to the timber shortage problems in this country. They are severe and are going to become more severe.

If we are going to avoid unacceptable economic impact or unacceptable environmental impact, we are going to have to do a better job of producing fiber on land in the United States. And, I think you make your point very well.

I would just, to underscore that, ask a question, if you do not believe that many of these areas might be beneficially devoted to the production of timber after the mining process is complete?

Mr. PARDO. I hope in my statement I raised that point, and I hope it is not just wishful thinking. It seems to me it is conceivable, under proper reclamation practices, that we could improve the situation.

The facts are that about 60 percent of the land in this country is in small, nonindustrial, private ownerships, and the difficulty there is that these are ownership units that, in many cases, it is uneconomical for the owner to supply proper timber stands and tree-growing practices.

I was looking at this as one conceivable way that we could begin to get better forest management on this type of land, particularly whereas at the present time we just don't have the economic capability to do the things that should be done on many of these properties.

Senator McClure. One statement I would like to make, and I don't mean to precipitate any argument or prolong this discussion, but I think you are entitled to know where I stand, as well as find out what your feelings are.

I have a very grave doubt in my mind of the moral rectitude of requiring the present industry to pay for the costs of rehabilitating land with which they had nothing to do in the past. That comes down to a question of the reclamation of orphan lands.

I think orphan lands should be reclaimed, and I am very much struck by the new thing injected by the administration's proposal that we merge the reclamation of orphan lands into present operations where we can do so by encouraging the secondary recovery in the same areas, and, therefore, reclaim the land.

But, I doubt very much the wisdom of requiring the industry and the consumers of that industry to pay the cost of something that happened a long time ago with which they were not associated.

I think we have to find a means of providing the money to do that job, but I just think a severance tax or a cost of operations imposed on this particular industry at this time would be the appropriate way to do that.

Ms. Matisoff. Senator, in the 1967 debate in West Virginia, it was actually after the law had passed and when the regulations were being written up, they went to about 10 of the major coal companies on this regulation, and it was amazing. Most of them were very pleased to have a $60 fee put on, per acre, to pay for reclaiming orphan lands that had been previously left.

I think it might be an interesting thing to find out just how the industry feels about this and their experience in the States where this type of regulation has been passed; maybe do a study on the amount of acreage that has, in fact, been reclaimed.

Senator McClure. It seems to me I could draw an extreme parallel, which is always unfair. But, we, as a nation, have undertaken to "do-justice" to the Indians of this country in confiscation of lands taken in violation of treaties. It seems to me it would be just as just in that instance to require the present leases of Indian lands to pay those millions of dollars as it would be to now require this industry to pay the cost of something with which they were not associated, because most of the present operators were not in the industry at the time the lands were defiled in the past.

I feel that we, as a society, should pay the cost, and not expect one small segment of our society to pay that cost, which has nothing at all to do with any reluctance on my part to reclaim the orphan lands. I think they ought to be reclaimed.

Ms. DUNLAP. I would like to respond to that. So long as the orphan lands exist, continuing to pollute in whatever form they are, and so long as there will probably be some sort of Federal commitment made, I think our position is probably going to be that we would prefer a severance tax rather than rely simply upon the appropriations and authorization process. That way more money could be made available and, therefore, more jobs created, many of which are construction-type jobs.

The point being that even though a lot of those current operations may not have been, in fact, legally or directly responsible, that this is a cost which they will pass on to the consumer of those products anyway. They will not take a smaller profit margin, and probably in the course of the severance tax mechanism more money could be loosened up and a better job done quicker, stimulating more jobs.

Senator MCCLURE. Which has absolutely nothing to do with the justice of the case. It is simply a way of avoiding the appropriation process and getting some money.

Mr. BORRELLI. I wouldn't contend, Senator, that justice in the case is being ignored totally, speaking particularly with reference to Appalachia, the ownership of these mineral rights has not changed very much in most of these regions.

We are talking about mineral rights that have been outstanding for many, many decades, and we are talking in terms of strip mine development, primarily; about a development that has seen a spurt in the past 20 years and maybe the last decade.

Senator MCCLURE. Maybe I, as a westerner, should welcome that because most of the reclamation will be done in the East and most will be paid for by easterners. So, maybe I should opt for that rather than a social cost to be borne by the country.

Thank you very much for your testimony. I think you have been a very constructive panel.

Senator METCALF. Thank you very much, Senator McClure.

To whom are we indebted for the pictures?

Mr. BORRELLI. You are indebted to the Sierra Club for the color pictures and the black and white pictures to my right were brought here by the Tennessee Citizens for Wilderness Planning, and taken by photographers for the National Wildlife Federation.

Senator METCALF. We are delighted to have them, and we will give all the people an opportunity to inspect them. Thank you very much. You have been most helpful with your testimony. I appreciate your appearance here and your patience. You have made a very constructive contribution, and we will welcome any further comments you may make, and they will be incorporated in the record.

We have one more witness this morning, Ms. Russell representing the Tennessee Citizens for Wilderness Planning.

How long will you take, or would you rather come back this afternoon?

Ms. RUSSELL. I will probably take about 10 minutes, and I have no preference as to whether it goes now or this afternoon.

Senator METCALF. At the conclusion of your testimony, the committee will go into recess. We will come back at 2 o'clock because there are witnesses who do have planes, and we will start off with Dr. Curry

and Senator Wallop. And, as far as this Senator is concerned, we are going to complete this list of witnesses today.

STATEMENT OF LIANE B. RUSSELL, TENNESSEE CITIZENS FOR WILDERNESS PLANNING

Ms. RUSSELL. Senator Metcalf and Senator McClure, I represent Tennessee Citizens for Wilderness Planning. TCWP, a statewide organization, formed 7 years ago.

In our extensive, written statement, we detail some of TCWP's longstanding experience with the problem of strip mining and reclamation, particularly in Tennessee. Our written statement also describes the present conditions in Tennessee coal strip mining, effects in respect to environmental, social and economic effects, and the workings of the 1972 State law.

In spite of this State law, we are continuing to see landslides, decapitated mountains and rivers running thick with silt. I would like to hold up this picture, in addition to the other two, that I was not able to get on the board.

I would like to point out that the girl who lives right next to this landslide over there is in the audience here, and I would like to show these landslides here, which were produced on mountains probably 22° to 24° in slope.

The people of our coal counties are continuing to have their lives blighted by damage to their wells and the spoiling of their surface waters, the flooding that covers their gardens and pastures with noxious materials, and landslides that endanger their lives and cover their roads.

Our written statement also provides data to show that strip mining, far from being an economic help to the coal counties, actually destroys the opportunity for future economic improvement.

I might briefly list a few of the most important inadequacies of our State law, which was touted by its sponsors as a strong law. It, as well as TVA contract provisions, permit slopes as steep as 28° to be stripped.

And, an observation, for instance, that reported in the recent GAO report amply indicates that landslides still occur at slopes of that magnitude. It allows spoil to be pushed downslope from the slid bench, and allows so-called "head-of-hollow fill," which actually sanctions spoil placed in drainways.

The steep slopes make a farce of revegetation. The law also makes totally inadequate provisions for information to be made available to citizens and citizen input into decisionmaking.

Our law has some strong features, but the problem in the States, Tennessee being just an example, is not just with the law but with its enforcement.

We have found spoil in streams in spite of the fact that a hundred-foot distance limitation is in our rules and regulations and also in the TVA contract.

Local residents have been unable to get needed information in time, and when they have petitioned the State on specific items, their requests have been ignored or discredited.

There are fewer than seven State-salaried coal inspectors for the State—entire State, and their salaries are low.

Finally, in our own repeated attempts to strengthen the State law, the influence of the strip mine industry over the State machinery has become very clear.

For these, and other reasons, we have concluded that strong federally developed and enforced controls over the rapidly growing practice of coal surface mining are essential. We feel that Federal law should embody the principle that surface mining on any appreciable scale should not be allowed in a new area or using a new technology until a truly satisfactory and long-term reclamation has been proven at meaningful test sites.

For reasons detailed in our written statement, we feel that the immedite and great need is to control the surface mining of coal, and we recommend that Federal legislation at this time be either restricted to coal, or that it have separate titles or sections on coal that take cognizance of the urgency in time and of the fact that very specific provisions are needed to control coal stripping that may not be required for other minerals.

We recommend that Federal legislation contain at least the following provisions. These are listed, starting at the bottom of page 6 of my written testimony.

Item A, provision for the rapid formation and development of the appropriate implementing body, so that prohibitions as well as effective regulations of coal mining would begin to take effect within 6 months of enactment.

We recommend the immediate prohibition of new surface mining in the following areas. First, on steep slopes, for the case of presently practiced contour-mining technologies, specifically those slopes measuring more than 15° from the horizontal between the undisturbed coal seam and points 200 feet downslope.

Second, where it would result in deposition of spoil on a downslope of greater than 15° from the horizontal, or where a manmade slope of greater than 24° would remain at the completion of grading.

We have seen, in our considerable experience in Tennessee, no method that can prevent considerable permanent soil loss and permanent severe ecological, esthetic, economic and human damage on slopes steeper than the ones I have cited.

We recommend also prohibition on most Federal lands, which I enumerated in my written statement, and on State lands acquired with the help of Federal funds.

Item C, we recommend provision for the termination within 6 months of ongoing mining of the types enumerated, except that reclamation efforts would continue.

Item D, provisions for designating areas unsuitable for surface mining, such designation being allowed both for specific and generic cases. On areas so designated, no new surface mining should be allowed and any ongoing mining must be terminated within 6 months.

The designating agencies, which can be Federal, regional, and/or State, should be required to make their designations within 6 months after passage of the act, and to make at least annual reviews of possible additional areas; and also be required, speedily, to consider additional designations, if petitioned by residents of the State.

And, we recommend regulation of all surface mining that is not prohibited under items B or D, by including in the act certain specific duties for the regulatory body.

These are listed in several detailed points, starting about two-thirds of the way down on page 7 of our written statement, and I do not have time to go into them here.

We recommend further specific provisions for the reclamation of those surface mined areas for which no person is legally responsible; that is, orphan mines, but given priority to those lands which present the greatest adverse effect on the environment.

We recommend provisions for citizen class action suits; and also explicit provisions that any State prohibitions or regulations that are more stringent than the Federal act be considered in compliance.

We feel that of existing agencies, the task might best be hadled by the Environmental Protection Agency or by a department that is totally independent of agencies having an interest in coal production.

If any portion of the regulatory functions is left to the States, it will be essential to insure that the bill refers to these functions "as enforced" rather than "as written."

Thorough and frequent Federal inspection would be essential for this.

With regard to the specific bills, a copy of two of the Senate bills and two of the House bills have been available to us. We regret not having seen Senator Baker's bill, especially since he is our own Senator, and we hope that we will be able to submit additional comments on that bill.

Our written testimony contains some detailed comments, especially on the two Senate bills, S. 923 and S. 425 that were available to us. Briefly summarized, these are as follows.

We reject S. 923 as inadequate and weaker even than our existing State law. For example, the bill requires reclamation to be completed within "reasonable" time limits, or "as soon as feasible," and it does not state what the starting point of the timing should be.

In our State, we have found it very important and have managed to get into State law that the timing should be from the time of initial soil disturbance rather than from completion of mining, which we have found to be a useless provision.

We object also to the unbelievably long time that could elapse before regulations would become effective; namely, 4½ or even as much as 7½ years for the smaller operations.

Similarly, the bill sets no time limit within which the Secretary must act if a State fails to conform or fails to submit regulations.

S. 923, further, fails to make any specific requirements for mine and reclamation plans, or for other information, and it fails totally to provide for citizen input prior to permit approval or prior to bond release.

And, what performance standards it does prescribe are so weak, in our opinion, as to be worse than useless.

Now, as far as S. 425 is concerned, although we consider S. 425 to meet several of the recommendations of our written testimony, for example, it does contain very detailed and specific requirements for permit applications. It does put the burden of proof that reclamation

can and will be accomplished on the applicant and regulatory authority.

It does provide opportunities for public input, both prior to permit approval and bond release, and there are other good features that we list in our written testimony.

We do consider the following to be among the weaker points of S. 425. First, although the States would have to conform with the requirements for permit applications in mining and reclamation plans, nothing in the act really guarantees Federal surveillance of State implementation. Mechanisms for determining when State enforcement is improper are not adequately specified.

Second, while the timetable is considerably tighter than in S. 923, it would still allow close to 2 years to elapse before regulation under the act went into effect. The moratorium provision of section 206 is of almost negligible import because of its far-reaching exceptions; and most of the strip mining in Tennessee would be an exception because most of it goes to the Tennessee Valley Authority.

Third, the bill contains, instead of slope limitations, only a provision for a study of such limitations. Statutory slope limitations appear, to us to be crucial to shield the enforcing agency from unrelenting pressures to allow the mining of unreclaimable sites.

If a study is to be required, the study team, we feel, should include representatives of conservation groups, and drafts should be made available for alternative comment and for public input prior to final publication.

A fourth weakness of S. 425, we feel that mining and reclamation standards do not contain the minimum requirement; that the technique used be a proven one if anything but small experimental acreages are to be involved.

Furthermore, the temporary suspension authority of section 407, we feel, may well be abused. A clause should be added to this section to provide that, following such a suspension, reclamation of the mined lands must be completed substantially as if the suspension had not occurred.

Additional criticisms are discussed in our written statement, but I will not go into them.

As far as Senator Case's bill is concerned, and I am sorry I do not have the number, but we have read H.R. 1000, and we endorse that bill's provisions that would eliminate within 6 months of enactment all of the evils of future contour stripping; and we also endorse the deep-mining provisions.

Thank you, Senator.

Senator METCALF. Thank you very much for a most comprehensive statement. I have had an opportunity to glance through it as you read it, and this is going to be a tremendously helpful statement for the committee in drafting and putting together this legislation.

I think your constructive suggestions about the various legislation before us, and some of your criticisms are both well taken. I want to congratulate you for a splendid job of summarizing and a tremendously able job of analyzing this legislation and making a very important statement to this committee. Thank you very much.

[The complete statement of Mr. Russell follows:]

TENNESSEE CITIZENS for WILDERNESS PLANNING

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STATEMENT SUBMITTED FOR THE RECORD OF THE HEARINGS ON STRIPMINE LEGISLATION, COMMITTEE ON INTERIOR AND INSULAR AFFAIRS, UNITED STATES SENATE, WASHINGTON, D.C., MARCH 13-16, 1973

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I. TCWP's KNOWLEDGE OF THE STRIPMINING PROBLEM

Tennessee Citizens for Wilderness Planning (TCWP) is a statewide organization formed almost seven 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; and when this law and its enforcement proved to be quite inadequate to control the ravages of ever-increasing stripmining in our state, we drafted and supported stronger, yet still moderate, state legislation introduced both in the 1971 and 1972 sessions of the Tennessee General Assembly. We have also been in frequent contact with the Division of Surface Mining and Reclamation of the Tennessee Dept. of Conservation in an attempt to promote strong administration. These state efforts have been only very partially successful, both at the legislative and administration 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) and in private practice. We have talked to local mountain people, to concerned persons in this and other states, to legislators, and to administrators. We have sponsored public meetings to hear from authorities on all sides, and we have attended meetings sponsored by others that have relevance to coal stripping. We have also studied proposed federal legislation, as well as laws operative in some other states.

The present statement represents an updating and revision of testimony presented to the 92nd Congress.

II. PRESENT CONDITIONS IN TENNESSEE COAL STRIPPING

A. Environmental effects of stripmining.

Tennessee, which produced about 11 million tons of coal in 1972, is not among the major coal-producing states; but in the 5 mountain and plateau counties of the Cumberlands, in which over 80% of Tennessee's coal is found, mining has a dominant effect on the land and on the lives of the people. Almost two-thirds of our coal (61% in 1972) 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 high annual rainfall.

Our continuing field inspections have indicated that, since the time of passage of Tennessee's first stripmine law of 1967, and even since passage of the stronger law of 1972, 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; over a hundred million tons of earth have been pushed over the side of the bench and down the slopes; and many existing mine spoils have turned into landslides. We are convinced that if this damage is allowed to continue unabated, even for a short time, the Cumberland region of eastern Tennessee will increasingly become an ecological and human disaster area.

Next to landslides, erosion, and the destruction of mountain lands, the worst damage of contour stripmining in Tennessee is that to streams and water supplies. The Director of the Tennessee Division of Water Quality Control has stated that "It's our opinion that stripmining cannot be done without violating water quality standards" (Knoxville News-Sentinel, 1/7/73), and that he does not "see how any strip mine could get a [water discharge] permit under state law" (Oak Ridger, 3/5/73). We know of no streams that drain contour stripped areas that are not running thick with silt. Some of this silt deposits on the riverbed and on the banks and chokes out aquatic life and shoreline vegetation. Such deposits reduce the water-carrying capacity of streambeds; and this, plus the fact that run-off from denuded mountain sides is much faster, causes many creeks to flood after even moderate rains and to cover fields, gardens, and pastures with damaging silt and mineral deposits.

B. Social and economic effects of stripmining.

The residents of the mountainous coal counties of Tennessee are presently bearing the greatest brunt of the contour stripping in the area. These are independent people who had a great attachment to the once beautiful land around them. Now their environment is being visually destroyed. In addition, they have to sustain innumerable tangible damages such as the following. (a) Stripmining severely damages underground water supplies, such as wells and springs. A few months ago (after passage of our "stronger" 1972 law), one of these people finally went to court, and Judge Phillips ruled:

" ... contamination of the Pless Seiber well is the immediate and direct result of strip mining operations ... " (b) Stripmining severely damages surface water supplies on which livestock depends. We know of at least one local resident who had to carry water to his stock. Others have had to give up keeping stock. (c) Flooding creeks (see IIA, above) cover gardens, fields, and pasture with damaging material. ("Enough coal to ruin my garden, but not enough to heat my house," according to Anderson County resident, Babe Edwards.) (d) Landslides endanger property and lives. We know of a school yard in the New River drainage into which gigantic boulders from a landslide had rolled (fortunately while no children were playing there). We also know of sections of County roads that were repeatedly getting covered from landslides and erosion, one case costing one county many thousands of dollars a year in repeated road-clearing jobs. (e) Blasting done in connection with stripmining operations damages homes in nearby small communities.

Stripmining is not an economic help to the depressed local area and, in fact, destroys the opportunity for future economic improvement. Thus, very few persons are employed in stripmining, only between 55 and 347 (representing far less than 10% of the total employment) in each of the five counties that between them produce over 80% of Tennessee's stripped coal; and only about 900 in the entire State of Tennessee (Annual Report, Tenn. Dept. of Labor, for FY 71: our analysis of these figures indicates that they may be maximized by probable overlaps). A high percentage of these employees load and drive coal trucks, which they would be doing anyway if the coal were deepmined instead of stripped. Deepmining, when it was done in these counties, employed many more people; and there was an upsurge in unemployment when the switchover from deep-mining to stripmining occurred. The unemployment rate in the coal counties currently far exceeds the state average. Nor do local landowners benefit from coal royalties, for large outside land companies own over 75% of Tennessee's coal lands, holding from ca. 40,000 to ca. 70,000 acres each; in one major Tennessee coal county, every one of the 1972 strip mine operations was conducted on land owned by out-of-state companies. An economic study by TVA of two closely comparable blocs of counties (28 in all), that differed in that stripmining was a major economic activity in one but not in the other, showed that income levels were actually slightly lower in the strip counties.

Stripmining further destroys hope for economic help from other sources. The destructive mining operations are 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 actual mining. Not only are recreational and farming resources directly destroyed, but the development of manufacturing and other alternative means of employment is discouraged by the destruction of the landscape, and by the low morale of the people.

C. The workings of Tennessee's stripmine law and of TVA contract requirements.

In our attempts to strengthen Tennessee's 1967 stripmine law, the influence of the stripmine industry over key members of the state legislature became clear. In spite of the fact that we and others expended very considerable efforts in 1971 and 1972, the new law that passed in 1972 is still a weak one as enforced (even though its sponsors widely touted it as "the strongest state law"). A year after passage, we see little indication that landslides and stream pollution are being checked by the language or enforcement of the new law. The main reason for this failure lies in the fact that both the law and TVA contract requirements permit slopes as steep as 28° to be stripped, with bench-width controls that have proved inadequate.

We want to point out as strongly as possible that slopes that steep should not be stripmined, and we urge that federal law ensure that stripmining does not deposit any spoil on slopes steeper than 15° (see V, below). A recent GAO report (B-114850) found landslides on two of four TVA-contracted stripmining operations that incorporate a 28°-slope limitation; on one of these, seven landslides had occurred. A further contribution to our continuous landslide and stream-siltation problem can be traced to those weak provisions, both of the Tennessee 1972 law and of TVA contract requirements, that allow spoil to be pushed downslope from the solid bench, even at relatively steep slopes. Furthermore, the Rules and Regulations adopted under the 1972 law allow "head-of-hollow fill," a provision that actually sanctions the placement of spoil into drainways (and even streams flowing at least 6 months during the year) and thus greatly contributes to erosion and stream pollution. The steep piling up of spoil that occurs as a result of these various permitted practices makes a farce of re-vegetation. We have seen many plantings that show signs of failure after the early establishment period; and, often, where a spindly seedling manages to survive a while, it stands in isolation among the erosion channels or on the brink of an impending landslide.

Furthermore, the Tennessee 1972 law has no provisions limiting the distance from waterways at which stripmining is permitted. Both, the subsequently adopted Rules and Regulations, and TVA contract requirements contain a 100-foot limit; but either this is not being enforced or it does not work, for we know of cases (one of them photographically documented) where great quantities of spoil are entering a stream by erosion and direct slippage. As we have indicated above (IIA), present Tennessee stripmine operations are considered by the Director of Water Quality Control to be violating water quality standards (unofficial assessment).

Furthermore, the Tennessee law makes totally inadequate provisions for citizen input. Residents living in a stripmine area have virtually no way of finding out where a proposed operation is to be located in time to do anything about it, have no practical access to the permit application, and have totally inadequate time to contact the Director of Surface Mining before a permit is granted. No hearings are provided for, either prior to the granting of a permit or prior to bond release. On occasions when local residents have petitioned the state against granting specific permits, their requests have been ignored or discredited. Local residents are not protected by the law against the granting of a permit that would diminish the usability, safety, or value of their property or of the county's property; nor are they safeguarded against blast damage.

The State in 1972 had only seven coal inspectors (three of them paid from temporary federal funds) to police about 5000 acres under permit, many of the operations being greatly spread out in area and accessible only with difficulty. (Note: The Tennessee Dept. of Labor Report for FY '71 lists 106 strip and/or auger mines, some of these presumably under the same permit.) Inspectors' salaries are low and the pressure from the stripmine industry considerable.

III. THE NEED FOR FEDERAL LEGISLATION AND ENFORCEMENT

Because of the ecologically, socially, and economically disastrous effects of most past and present stripmining in Tennessee; the fact that enforcement of our state law at present appears ineffective in controlling this practice; tne fact that reclamation

under allowed conditions of contour stripping is not a meaningful concept, especially on the outslopes; 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 federal 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 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) A federal responsibility in the stripmine problem could assure more funds for efficient enforcement, a greater certainty of effective punishment of offenders, and the utilization of expertise available in other government agencies.

(c) In its passage and subsequent enforcement, federal legislation is hopefully less subject to the type of industry manipulation we have witnessed on the state level.

We believe, further, that a federal perspective would clearly reveal that stripmining -- or at least contour and auger mining for coal -- could rapidly be replaced by deep-mining, without ill effects on our energy requirements. Nation-wide, electric utilities in 1970 relied on contour and auger mined coal for only about 11% of their fuel needs, in BTU; and probably only about one half of this came from slopes steeper than 20° (see Stanford Research Institute study in West Virginia). About 90% of this coal was burned in only 9 states, which together with adjacent states contain a several-hundred-fold multiple of deepminable coal. A switch to deepmining would thus present no appreciable transportation problem, would provide more employment per ton mined, and would allow other sources of employment in areas in which ever-increasing devastation now inhibits alternate or additional economic growth.

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 for coal.

We have concluded that on or near the steep slopes of eastern Tennessee and other parts of Appalachia, even the most advanced present 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 and under the 1972 state law have been insufficient to prevent landslides and severe stream pollution. Nothing prevents the scarring due to the persisting highwall. Moreover, the longterm 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 mining and reclamation experiment which may give negative results.

It is therefore our opinion that stripmining as we know it 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. A considerably higher percentage of Appalachia's coal could be extracted by deepmining than by stripmining (which, in fact, often precludes or limits future deepmining).

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 coal 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 committee. We feel that federal law should embody the principle that surface mining on any appreciable scale should not be allowed in a new area, or using a new technology, until truly satisfactory reclamation has been proved at meaningful test sites.

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 ON COAL

Our detailed experience in Tennessee is with coal mining only, although we have observed surface mining for other resources, such as phosphate, clay, dimension stone, and sand and gravel. While the mining for these resources does require regulation, in our state by far the most acute environmental and human problems are caused by the stripping of coal. Furthermore, because of increasing energy demands (whose validity we shall not here argue), coal mining is expected to increase even more than it already has in recent years, while the demand for other mined resources is relatively more stable. We therefore feel that the immediate and great need is for federal legislation to control the surface mining for coal, and recommend that the bill be either restricted to coal; or that it have separate titles or sections on coal that take cognizance of the urgency in time and of the fact that very specific provisions are needed to control coal stripping that may not be required for other minerals.

Our personal acquaintance is with contour stripping for coal and our subsequent suggestions are geared to this knowledge. While some of the following paragraphs pertain largely to regulation of continuing area mining, we do not want to imply that such area mining could not be phased out in a matter of a few years.

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 coal mining and reclamation practices would begin to take effect within 6 months of enactment.

B. Immediate prohibition of new surface mining in the following areas:

1. on steep slopes, for the case of presently practiced contour-mining technologies; specifically those slopes measuring more than 15 degrees from the horizontal between the undisturbed coal seam and points 200 feet downslope;

2. where it would result in deposition of spoil on a downslope of greater than 15 degrees from the horizontal, or where a man-made slope of greater than 24° would remain at the completion of grading;

3. under other conditions, to be specifically enumerated (based on information by experts from other areas), where surface mining would result in irreparable harm to ecological or human values;

4. on federal lands, specifically including (but not limited to) components of the National Park, National Forest, and National Wildlife Refuge systems; areas within the National Wilderness Preservation System, National Wild and Scenic River System, National Trails System; areas listed for study in any of the foregoing; and federal lands contiguous to any of the foregoing; and on state lands acquired with the help of federal funds.

C. Provisions for the termination within 6 months of on-going mining of the types enumerated under B., above; except that reclamation efforts would continue until completed.

D. Provisions for designating areas as unsuitable for surface mining, such designation being allowed both for specific and generic cases. Designation should be made by the federal regulatory body, and, more locally, by states or regions, after ample opportunity for public hearings. On areas thus designated, no new surface mining should be allowed, and any on-going mining must be terminated within 6 months. The designating agencies (federal, regional, and/or state) should be required to make their initial designation(s) within 6 months after passage of the Act, and to make at least annual reviews of possible additional areas; and also be required speedily to consider additional designations if petitioned by ten or more residents of the state or region.

E. Regulation of all surface mining that is not prohibited under B., or D., above by including in the language of the Act at least the following specific duties for the regulatory body.

1. The duty 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, detailed information on the topography, the chemical and physical nature and depth of soil and mineral strata, the location of surface and subsurface water in the proposed mining area, and the climatological factors in the locality; and a detailed mining and reclamation plan, including a time schedule for each phase, and a clear demonstration based on actual experience that these plans can and will meet the requirements of this Act.

2. The duty to deny permits in whole or in part unless the regulatory authority positively finds that reclamation and revegetation of the area can be achieved in such a way that they will prevent off-site effects and assure return to a

land use at least as high as that which existed prior to any mining. Permits must also be denied where off-site blast damage to the environment or property cannot be avoided; where the proposed disturbed area is less than 500 feet from a watercourse, or, if for any reason, pollution or siltation of watercourses or underground water cannot be avoided; where health, welfare, or 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.

3. The duty to control pre-mining, mining, grading, and revegetation procedures to assure absence of permanent environmental damage. Regulations to be issued shall require the most rapid possible timetables for the completion of grading and revegetation of affected areas on an acre-by-acre basis. Timing should be from initial soil disturbance, rather than completion of mining. The regulations shall also prevent the occurrence of off-site damage such as may be caused by erosion, water pollution, earth movement, and blasting effects.

4. The duty to hold a well advertised hearing in the county of the proposed mining site prior to the granting of each permit, if requested by 3 or more residents or by local agencies. In this hearing, the burden of proof should be on the permit applicant to show that his mining and reclamation can and will be carried out in accord with regulations. Another such hearing shall be held prior to release of bond. 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. The duty to suspend a permit immediately upon finding of a condition that threatens health, safety, or the environment, or that impedes reclamation; and to revoke a permit if investigation discloses noncompliance with the Act. For this and other actions, an adequate federal enforcement machinery must be set up, including inspection of each mine without prior notice and on an irregular basis at least twice a month by federal inspectors.

6. The duty to require filing of a bond, executed with proper surety, that is adequate to cover the requirement that reclamation restore the area to a land use at least as high as that existing before any mining; and to hold release of the bond until reclamation is stable and perpetual. In addition, authority to levy any other fees that may be required.

7. The duty to regulate prospecting operations by requiring a permit for any such operations that disturb the surface, and ensuring that they be subject to the same mining, grading, and revegetation regulations as are the major coal extractions themselves. Similarly, private haul roads and loading stations must be included in the affected area and be subject to reclamation.

F. Specific provisions for the reclamation of those surface-mined areas for which no person is legally responsible (orphan mines), giving priority to those lands that present the greatest adverse effects on the environment. Alternatively, the landowner could be made responsible for any reclamation efforts needed after bond has been released.

G. Provisions for citizen class action suits.

H. Explicit provisons that any state prohibitions or regulations that are more stringent than the Federal Act be considered in compliance.

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, or by a new department that is totally independent of agencies having an interest in coal production. If any portion of the regulatory functions is left to the states, it will be essential to ensure that the bill refers to these functions as enforced, rather than as written. Thorough and frequent federal inspection would be essential for this. No delegation of responsibility to a state should be allowed, unless state laws and capabilities are at least as rigorous as the federal. Even in such cases, rapid federal resumption of enforcement must be provided for if a state lapses in its performance.

VI. COMPARISON OF PENDING BILLS

A. General

Copies of the following 1973 bills have been available to us for study. We earlier studied all proposals before the 92nd Congress.

Bill Number	Title	Sponsor
S. 425	Surface Mining Reclamation Act	Jackson and others
S. 923	Mined Area Protection Act	Jackson and Fannin (administration bill)
H.R. 3	Coal Mine Surface Area Protection Act	Hays, Melcher, Morgan
H.R. 1000	Environmental Protection and Enhancement Act	Hechler and others

Rather than making detailed comparisons between these bills, we have suggested above (Section V) what we believe the minimum content of good federal stripmine legislation should be. Many of the provisions suggested by us are contained in one or another of the pending bills, and several of these provisions have been shown to be workable in certain states. For the purposes of this Senate hearing, our subsequent comments are somewhat more detailed for the Senate than for the House bills.

B. S. 923

We must reject S. 923 in that it would provide for us, in Tennessee, little if any improvement over the situation as it already exists. In fact, some of the provisions of S. 923 are considerably weaker than those of our existing state law, so that we might actually experience a retrogression. For example, the bill requires reclamation to be completed within "reasonable" time limits (Sec. 201(a)(4)) or "as soon as feasible" (Sec. 201 (b)(3)(i)), and does not state what the starting point of the timing should be. In Tennessee, it had become abundantly clear over the years that timing "from completion of mining" left many loopholes, and conservationists managed to insert a clause into the state act that requires grading on any given acre to be completed within 6 months of initial soil disturbance. We object also to the

unbelievably long time that could elapse before regulation would become effective in some of the states. Thus, under the terms of S. 923, a state has 2 years to propose regulations (Sec. 201(a)); the Secretary subsequently has 180 days in which to approve them (Sec. 201(d)); and the operator of an existing operation then has an additional 2 years before he must comply with regulations (or, an additional 5 years for smaller operations) -- making a total of 4 1/2 years (or 7 1/2 years for smaller operations) (Sec. 201(a)(2)). By that time, Tennessee's coal counties could be utterly destroyed. Similarly, no time limit is set within which the Secretary must act if a State fails to conform (Sec. 201(e)) or fails to submit regulations (Sec. 202(a)).

S. 923, further, fails to make any specific requirements for mining and reclamation plans, or for other information to be provided with the permit application; and it fails totally to provide for citizen input prior to permit approval or bond release. What performance standards it does prescribe are so weak as to be worse than useless: e.g., erosion and pollution must be "minimized" (rather than prevented), and grading may be to an "appropriate" contour "considering ... possible future uses" -- which, it might be pointed out, could be almost antyhing. The bill does recognize (Sec. 201(a)(5) and (8)) that new mining technologies should be tested, on a small scale only, until the effectiveness of reclamation can be assessed by actual experience.

S. 923 does not provide for federal inspectors except for the purpose of evaluating a State's enforcement (Sec. 205); and even where Federal regulation is in force, the Act does not specify frequency of inspection or other safeguards that make inspection an effective tool of enforcement. Further, S. 923 does not provide for restoration of orphan mines. Finally, we are disturbed that S. 923 requires both the States (Sec. 201(a)(19)) and the Secretary (Sec. 201(b)(1)) to consider relative costs of performance standards in addition to relative degrees of environmental protection. It is clear that what is referred to here are the immediate costs to the operator, and not the deferred costs of the damage that local residents or future generations will have to bear.

C. S425

We consider S. 425 -- a thorough and comprehensive bill -- to meet several of the requirements of Section V of our statement. Among the bill's many provisions that we applaud are the following

(1) Federal authority, though residing in the Department of the Interior, is separated from the Bureau of Mines, a branch that promotes the use of coal.

(2) While the bill covers all minerals, the time table for coal is tighter and some of the provisions more stringent.

(3) Detailed and specific requirements are given for permit applications, mining and reclamation plans, including the

(a) Requirement that reclamation restore the affected area to a condition at least capable of the uses existing before any mining;

(b) Requirement that immediate and permanent erosion and pollution be prevented (not merely "controlled" or "minimized");

(c) Requirement for stable, self-regenerating vegetation, to be of native type where advisable;

(d) Specific regulation for use of explosives.

Furthermore, permits and plans are made readily available to local residents.

(4) The burden of proof that reclamation can and will be accomplished is placed on the applicant and regulatory authority.

(5) Opportunities are provided for public input, both prior to permit approval and bond release.

(6) Inspection arrangements are specified that provide for irregular visits without prior notice.

(7) Enforcement procedures include the authority immediately to order cessation of an operation.

(8) The designation of land areas as unsuitable for surface mining is facilitated.

(9) More stringent state laws are permitted to continue in effect.

We consider the following to be among the weaker points of S. 425.

(1) Although the States would have to conform with the good requirements for permit applications, mining, and reclamation plans, nothing in the Act really guarantees federal surveillance of State implementation. While Federal enforcement would go into effect where State enforcement is inadequate, mechanisms for determining the latter condition are not adequately specified. (Frequency of federal inspections for this purpose should perhaps be spelled out in Sec. 213(a).) No penalties to operators are specified for the case where a State Program is in effect.

(2) While the time table is considerably tighter than in S. 923, it would still allow close to 2 years to elapse before regulation under the Act went into effect; namely, 8 1/2 months for promulgation of federal regulations (for cases where written objections are filed), plus 12 months thereafter when permits are first required. The moratorium provision of Sec. 206 is of almost negligible import because of its far-reaching exceptions.

(3) The bill contains, instead of slope limitations, only a provision for study of such limitations. We feel that the available evidence is more than sufficient that steep-slope stripping cannot be reclaimed. Statutory slope limitations appear to us to be crucial to shield the enforcing agency from unrelenting pressures to allow the mining of unreclaimable sites. If a study is to be required, this should be broadened, as follows:

(a) it should be recognized (Sec. 217(b)) that, in contour mining, the outslopes are the most hazardous and least well reclaimed. Grades of 35° are common there, and are generally unstable;

(b) account should be taken (Sec. 217(d)) of the negative impact of surface mining on the development of other industries in an area, e.g. tourism;

(c) the study team should include representatives of conservation groups; and drafts must be made available for alternative comment and for public input prior to final publication. There is already wide fear that this study is not objective, especially since coal-using agencies are prominent in providing the findings.

(4) The designation of land areas as unsuitable for mining should include a provision to allow citizen requests for such designation, and a moratorium on areas thus requested until such a time as a ruling is made.

(5) The 100-ft distance limitation (Sec. 215(c)) should be at least trebled for streams and lakes if polluted effluent is likely, as in the case of coal surface mining. The exception for "public access" is meaningless, since water will eventually flow to a point of public concern.

(6) Mining and reclamation standards do not contain the minimum requirement that the technique used be a proven one if anything but small experimental acreages are to be involved.

(7) Other weaknesses exist in reclamation standards. Thus, the requirement to grade to approximate original contour is weakened by an exception; there is no outright requirement to prevent landslides; the reclamation schedule is not tied in time or in space to the initial soil disturbance.

(8) The one inspection per month provided in 213(c) is inadequate during active mining, at least in the case of contour coal mining. A criterion based on the extent of change at the mining site should be added.

(9) The temporary suspension authority of Sec. 407 may well be abused. A clause should be added to provide that, following such a suspension, reclamation of the mined lands must be completed substantially as if the suspension had not occurred. Essentially, such additional language would allow temporary suspension of the timetable, not of the principle.

(10) Exclusions from the provisions of the Act (Sec. 203(a)) must be clarified to avoid certain loopholes

(a) Subsection 203(a)(3) as written might exempt a steel company that is extracting coal from its own lands for process use. A commercial use should clearly be made to include cases where products from the use of coal enter commerce. (It is unclear whether the definition in Sec. 401(5) is sufficient for this.)

(b) Subsection 203(a)(5) would allow the type of prospecting that, in Tennessee, has resulted in scraping vegetation off a 1000-foot strip straight down a mountainside.

(c) The exemption in Subsection 203(a)(4) should not apply if the locations are contiguous.

(11) Section 212(a)(10) protects as proprietary the chemical properties of the overburden, even if not of commercial importance. This is just the information which needs to be public, if hearing procedures are to be meaningful.

(12) The orphan-mine provisions in Title III do not protect lands reclaimed at public expense from soon being stripped again. There is also no provision that an operator who has failed to reclaim his mine (such that reclamation at public expense becomes necessary) will be forbidden to return to a State to mine again (Sec. 209(a)(5) requires only information, but no action). (Unfortunately, bad contour mining is not really susceptible to later reclamation -- the spoil banks prefer to remain and bleed!)

(13) In provisions that require the Secretary to consult other federal agencies, the bill should exempt those agencies that are coal users or power distributors and thus would not be expected to have an unbiassed view.

D. H.R. 3

This bill is similar to the bill which overwhelmingly passed the House of Representatives last fall, and in some features it resembles S. 425. While it is not an abolition bill, it has many good, strong provisions that could give effective regulation, although it also has several weaknesses. We appreciate those features of H.R. 3 that encourage and facilitate alert citizen participation, because only through citizen interest can one ensure adequate enforcement. H.R. 3 would go a long ways toward eliminating landslides and erosion by two of its provisions concerning slope: one, in Sec. 9(b), that prohibits removal of overburden from slopes greater than 20° (although with a new escape clause); and the other, in Sec. 18(c), that prohibits creation of a permanent spoil bank on a downslope greater than 14°. Except for the numerical values, these provisions resemble our recommendations V.B.1 and 2, above. We also especially endorse the provisions of Sec. 9(a) which puts the burden of proof for the purpose of granting a permit on a positive finding that reclamation <u>can</u> be achieved.

E. H.R. 1000

This bill would eliminate within 6 months of enactment all the evils of future contour stripping that we have tried to picture. Our suggested 15° slope limitation is in accord with this portion of H.R. 1000. In addition, H.R. 1000 would phase out area stripping over a 2-years period during which stringent regulations, similar to those suggested by us in V.E, would apply. We are convinced that surface coal mining could be phased out and that deep mining could take its place, since all available data indicate that deep-minable coal reserves are a great multiple of strippable reserves. Whether two years is a feasible length of time for the switchover is a question to which we have not been able to address ourselves in detail, although it would appear not to be greatly out of line. We endorse H.R. 1000's provisions with regard to the regulation of deepmining, since it is obvious that if contour stripping ceases (as we have advocated) and area stripping is phased out, deepmining activities will increase greatly and should be regulated from the start, to prevent environmental and human damage. We also endorse H.R. 1000's Title II, which provides assistance to workers adversely affected by the switchover from surface mining to stripmining. Finally we feel that EPA administration may be justified in view of the possible industry pressure on USDI's Bureau of Mines.

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 federal control and regulation. In our statement, we have described severe environmental, economic, and social damages that are threatening to turn our state's Cumberland region into an ecological and human disaster area.

Our state law is in several respects weak, and its enforcement has, so far, given little indication that environmental and social damages are being checked. The pace of very inadequately regulated stripping is rapidly increasing. For these and other enumerated reasons, we feel that effective federal legislation should be immediately passed and implemented; and that this legislation should provide for federal enforcement, or, at least, adequate surveillance to assure that any state enforcement that is allowed truly meets federal standards as a minimum.

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; (b) provisions for designating areas as unsuitable for surface mining; and (c) the rapid and strong regulation of all remaining surface mining, with adequate provisions for citizen input into decision making. We also advocate provisions for reclamation of orphan mines, for citizen class action suits, and for accepting more stringent state laws. These various major provisions are outlined in greater detail in our statement.

Of the bills currently pending, we reject S. 923 as totally inadequate and weaker than our existing state law. We endorse H.R. 1000's provisions that would terminate within 6 months all existing contour stripping for coal. (While our personal experience does not extend to area stripping, we do not wish to imply that such mining could not also be phased out in a matter of a few years.) H.R. 3 also would do much to eliminate many of the evils of contour stripping by virtue of its partial slope limitations. S. 425, H.R. 3, and H.R. 1000 all contain some excellent detailed provisions for effective regulation of surface mining, and we feel that their best features should be incorporated in that portion of a federal law that applies to what surface mining would remain after the exclusions that we have advocated. S.425 could be greatly strengthened by (among other things) increasing the federal role in enforcement and surveillance, shortening the timetable, and adding statutory slope limitations.

Senator METCALF. We will now be in recess until 2 o'clock, at which time we will hear Dr. Curry.

[Whereupon, at 1:15 p.m., the committee recessed to reconvene at 2 p.m. the same day.]

AFTERNOON SESSION

Senator METCALF. The committee will be in order.

At this time, we are honored to have Dr. Robert Curry of the University of Montana. During the last Congress, Dr. Curry testified before this committee on foresty operations, and his testimony not only electrified the committee, but it set off a controversy all over America that is still raging. He caused a lot of new thinking about the practice of clearcutting.

So, I am delighted that Dr. Curry has come back to Washington to give us the benefit of his advice on the effects of surface mining on soils, particularly in the arid West.

I am very pleased to have you here, Dr. Curry. I know that some of my colleagues have looked forward to your testimony.

STATEMENT OF DR. ROBERT CURRY, UNIVERSITY OF MONTANA

Dr. CURRY. Thank you, Mr. Chairman.

I am Robert Curry, associate professor of environmental geology at the University of Montana.

My professional field of specialization is in the area of the relationships between the uses of land, its biologic productivity, and the status of geologic evolution of the land's surface, including its soils. My graduate training is in plant ecology and geology, and, by the way, I am a card-carrying member of the miners' union. I have worked for 2 years in open pit mining.

My comments here will be specifically directed toward an understanding of the multiple factors that need to be considered when dealing with problems of land reclamation in the Western United States, to the extent that these problems are different from those encountered in the more humid regions of Eastern United States.

The testimony I've heard this morning, and that I have read about in the past few days, seems dominantly to have dealt with conditions in the Eastern United States. And, the suggestions that have been made here this morning, although well thought out and very considered suggestions, are not those—often not those that are really going to do the job in the West.

Specifically, I want to talk about the area which my prepared testimony shows in map form, but which is the area essentially in the Western United States, where precipitation is less than evaporation; where the potential moisture evaporated in a given year is greater than that which falls as rain. This constitutes some 90 percent of the Western United States.

I estimate that over 95 percent of the recoverable fossil fuel resources of the Western United States, such as coal and oil shale, are found in these areas, as well as the vast bulk of the economically recoverable gravels, gypsum, bentonite, copper, uranium, and other potentially strip-mined or surface-mined deposits.

Basically, reclamation conditions, procedures and success in the Eastern United States, particularly in Appalachia, have little or no bearing on conditions to be expected in the Western United States. The reclamation conditions in the West are wholly different.

I have visited and studied eastern reclamation, as well as that in Great Britain and Germany, and am impressed with the few partially successful efforts I have seen.

All of the extensively surface mined areas of the East, such as Kentucky, West Virginia, southwestern Indiana, southeastern Illinois, and much of Pennsylvania, are characterized by having deep residual soils and high rates of mineral weathering.

This has permitted the development in the United States of reclamation techniques such as stockpiling soils, and later, reapplication of these stockpiling soils to the disturbed areas. Also, we have developed the concept of broadcast hydroseeding, recontouring of mined areas, and forms of vegetation replanting, that have, at times, had some success.

I now see many of these same techniques being contemplated and even used in the arid West today, apparently based on little more research than the measures of success that have been demonstrated in the East. In my opinion, this is disastrous.

Reclamation in the West differs from that in the East primarily because of the aridity during summer months, and also because the ages of the land surface in the West, which are much less than those generally found in the surface mine areas of the East and South.

In my prepared testimony, I give some evidence of these differences in ages and the conditions that result therefrom. What these data mean, in effect, is that the ground surface, once disturbed in the West, cannot recover to its present state of succession or subclimax vegetation without extremely long periods of geologic time—many times longer than we might expect man to inhabit the Earth.

Senator METCALF. I wish you would repeat that. Do you mean that once we have disturbed the ground surface of the West, we probably not only cannot recover it in the lifetime of the next few generations, but that it will take longer than we expect man to inhabit the Earth?

Dr. CURRY. Right. I am a geologist, and I look at man as a very temporary species on Earth.

Senator METCALF. But, you are not speaking as some of the environmentalists or ecologists who say that our span on the Earth is very short because of the use of insecticides and pesticides or that we are going to wipe ourselves out with atomic bombs.

Dr. CURRY. No. As a matter of fact, we are past due for extinction, on the average, about a million years ago. I will elaborate on that in a short while.

In recent years, geologists, soil scientists, and paleoclimatologists have learned that over much of the arid West, there appear to have been brief geologic periods favorable for soil formation, while during the bulk of the times of evolution of our land surfaces, soil development is so restrained that the land surface can merely cycle plant nutrients between existing soil minerals, soil biota and sparse plants in a very delicately balanced fashion.

This finding that we are now living in a unique period of time has come as a considerable shock to many, particularly to agricultural

scientists because it means that we are now living in a period of time when natural conditions cannot be expected to maintain present ground covers should those ground covers and their geologic substrates be disturbed.

In other words, I am not saying that no ground cover can exist; merely that the present ground covers cannot be reestablished in their present figure and biogeochemical status.

In essence, our western soils and their plants and animals are fossils, even though they are alive, and they are relics of short periods of wetter conditions in the past 10,000 to 1,000,000 years. For instance, in Nevada, the desert vegetation is supported by a soil formed in two short periods of time; one about 1,500 years ago and one about 5,000 years ago. These two, soil-forming intervals, which bear most of the soils of the central Great Basin, correlate geologically and temporally with similar relic surficial soils in Utah, Colorado, Wyoming, New Mexico, Arizona and California, where we have done these investigations.

These soils are not forming today and cannot form today under today's climatic conditions.

This is very different than what we have in the Eastern United States. In the East, we have deep generally geologically tertiary weathering profiles, and these have yielded soil materials in some places 100 or more feet deep and relatively homogeneous throughout with the exception of the top few organic-rich feet.

Much strip and contour-mined land in the Southeast has merely to be recontoured and a few feet of the weathered mantle bulldozed over the surface to be able to support a sometimes lush vegetative cover, where acid drainage is controlled, fertilizers are used, seeding is careful, and the other reclamation considerations that the committee has heard much of today are taken into account.

In the West, the total soil depths, and easterners would laugh at us for even calling much of our interior "soil," are on the order of inches and the zonation of minerals and living plant and aminal matter is extreme.

Stockpiling soil and recovering the lands for reclamation, may in some cases, do more harm than good, where, for instance, the calcium carbonate layer underlaying much arid land soil is mixed with the nitrogen-rich organic layer and the biologic carbon-nitrogen balance is destroyed.

The U.S. Geological Survey is doing work on just this problem today, and I have given a reference in my prepared testimony indicating this.

To destroy this segregation in the arid West by homogenizing the top few feet of surficial substrate is most often counterproductive from the biologic point of view, as is witenssed by those attempting to till lands in arid regions and finding that progressively higher fertilizer and gypsum treatment are necessary, and that ultimately production ceases unless soils can be leached with artificially developed water sources.

I will get back to this in a short while, and we will talk about the problems of deep plowing, as recommended by the Department of Agriculture.

The single exception to this would be the dry-land wheat farms of eastern Washington developed on a wind-transported, deep soil mantle derived from glaciers, but even here upset by the biogeochemical balance by tilling requires enormous expenditures of fertilizer in progressively increasing quantities.

In the East, where fresh, unweathered geologic materials are brought to the surface in rare cases and reclamation must proceed without benefit of soil materials, the warm temperatures, coupled with high summer humidity and high ground moisture levels, permit some species of plants to survive and to produce their own soil in periods of time as short as a human lifetime.

However, in the West, unless precious water is imported and the sites are watered down on the order of 200 to 2,000 years to simulate the naturally wetter conditions during the soilforming periods, reclamation to the point of self-sustenance is impossible.

Suggestions that partly weathered materials be imported, perhaps from the East, and augmented with organic matter, such as sewage sludge, for the purpose of manufacturing western soils, and we heard something about that this morning, may be usable alternatives and, in my opinion, need further study.

To my knowledge, this is not being done in the arid West today. If facilities for export of coal or other bulk commodities are to be contemplated, then it may not be economically impossible to require that soil components be mined elsewhere and shipped back to the site of the original surface mining. But, of course, this will greatly increase the acreage of land disturbed by a given mining action.

I go on to discuss the problems of water shortage, which is a very critical problem in the West, and one which is absolutely mandatory and must be considered for the internalized cost for reclamation, and I discuss the problem of palatability of forbs, the palatability of the area for grazing livestock during reclamation.

In my opinion, the times allowed for reclamation and the moneys allocated for such reclamation through State legislation in the West are very inadequate. In no instance that I can find are present, western mining laws applying to western reclamation adequate to insure minimal sustained recovery.

When one considers the rising costs of water and fertilizer, and the rising values of maintained water quality, I estimate that costs—that ultimate costs of reclamation in the West are 10 to 100 times as great as those on steep, contour-stripped lands in the Southeast.

I would like now to summarize by giving you some specific recommendations for reclamation, and I am not going to go through all of them that I have given in my prepared testimony.

First, let me say that successful reclamation should be defined as "restoration to a state under which vegetative cover and nutrient cycles are as closed as before man-caused disturbance."

This is an ecological concept which means that the nutrients are not being lost any faster after recovery than they were before. Once again, we are talking about the same kind of effect that this committee addressed itself to in the question today.

Two, stable soil-vegetation relationships imply subclimax vegetative cover that is adapted to the range of extremes, not means, of climatic and hydrologic conditions that has existed and may reasonably

be expected to exist in the Western United States for a period of several thousand years.

In other words, just because someone is able to reclaim an area for 1 year or 2 years and say, "See, here is a nice, pretty picture, and here is vegetation that is successful," that does not mean that that vegetation is adapted to the extremes of conditions that one could expect and native vegetation is.

In addition, a key to reclamation is not in the management of ground cover, but in the management of the soil-plant combination best adapted to the site. This is where European reclamation differs greatly in philosophic concept from that which we apply in this country.

This means that one should not strive toward most rapid growth or most vigorous green lands, but should strive toward that combination of plants, animals, soil and soil micro-organisms that will permit long-term adaptation to expectable extremes of site climatic and other conditions.

Next, soil is not something that can be stored in a pile while mining goes on and then spread back over the ground. This is possible to some extent in the East, but not in the West.

Soil is a living, biogeochemical substrate, composed of partly weathered and stratified minerals, delicately-bound mineral nutrients that are available to plants upon demand, but not available to leaching rain waters, and living and dead organic substances and organisms that participate in the nutrient cycling between plant and substrate.

The exact stratigraphic order of each 2- to 4-inch segment of the top foot or more of the soil must be preserved to facilitate reclamation to a stable community, and it must be kept viable. It has taken, at minimum, 10,000 years for the soil and its inhabitants to develop in eastern Montana, and this soil is today still evolving.

Thus, by using large earthmoving equipment, it becomes very difficult to remove soil in layers as thin as 2 inches and then replace it in the same original stratigraphic order. It is possible, because things are not so critical in the East, to remove soil in cuts as deep as 6 feet and spread it back without loss of productivity.

Thus, to spread the so-called topsoil back over the ground has demonstrably increased the rate of restoration of lands, even in arid areas. Here, we get into the U.S. Department of Agriculture deep-plowing program.

However, part of the reason for this increase in productivity is that the homogenized topsoil behaves as does freshly plowed virgin land. It has its nutrient balance structures broken and releases its nutrients in excess to rain waters or snow-melt, thus producing vigorous plant growth, especially of nonnative species and weeds.

But, this vigorous plant growth is only for a short period of time, a period of time from years to, at most, decades. This makes for high farm yields for several yields, or, in the case of mine land, creates nice places to take color photographs and promotional field trips.

But, it defeats the natural nutrient cycling mechanisms, and will ultimately result in a reduced vigor, reduced population stability and retarded succession, plant succession, relative to adjacent, undisturbed areas.

Thus, 100 years hence, the reclaimed lands in the West will be less vigorous than those lands that have not been disturbed. Reclamation,

to me, implies long-term management to insure population stability. Succession accompanying restructuring and renewed weathering balances in the soil takes at least hundreds of years in the arid West.

What I am essentially saying here is that the deep plowing or homogenization of soils does, indeed, in some cases where we aren't dealing with salt-affected soils or high calcium carbonate soils increase the productivity of the soils, but it does so for only a short period of time.

And, if we are talking about reclamation, where the company is responsible for the reclaimed lands for a longer period of time than just a few years, then we, indeed, have to consider legislation which will insure that the company doesn't get themselves into a financial or economic bind.

Water becomes more expensive through the years; fertilizers become more expensive through the years, and when these costs of reclamation are internalized we get a progressively higher cost as the years progress than instead of progressively lower costs, as we have in the East where reclamation has succeeded

Reclamation implies replacement of the original water-holding capacity of the soil. This can be done either by preserving the soil structure and density—a virtual impossibility using presently available earth-moving equipment—or by remanufacturing a soil using substance such as sewage, sludge, or other organic wastes.

Such manufactured soils may work, and may ultimately speed recovery of a natural soil profile; but we are not, to my knowledge, conducting the necessary experimentation to permit development of such procedures without possible negative side-effects.

Last, we, at present, completely lack the necessary base line data upon which to assess or conduct reclamation in the West. We need careful studies of ecotypic and genotypic variations in the native and introduced species being considered for reclamation, and we need sources of seed for those genotypes ultimately selected.

We need observations of the year-to-year differences in extremes of environmental conditions that may reasonably be expected in the arid West, a region of extreme variation.

We need data on the effects of fertilization and irrigation on long-term soil fertility under proposed reclamation conditions, especially under the influence of airborne wastes that can be anticipated during the short span of development, strip mine coal development, and we need data on the influence of strip mining reclamation on surface and ground water quality and quantity.

In summary, our present research efforts and knowledge of reclamation procedures applicable to arid western United States are wholly inadequate upon which to base measures of success or failure of reclamation efforts.

We need very tight reclamation legislation, not just a little tighter, as some people said this morning. But, in my opinion, very tight legislation, and we need this legislation, I think, to be specific to those portions of the United States with precipitation less than evaporation at the present time.

This means effectively that we may have to consider different kinds of legislation for the eastern United States than for western area of

the United States because the same procedures may be detrimental to one place, whereas they may be beneficial elsewhere.

This legislation should specify carefully the precise characteristics to be restored, and Dr. Harold Malde, of the U.S. Geological Survey, has been working on such precise legislative language and is available to help Congress if he should be asked.

In my opinion, the legislation should simultaneously stimulate research to gain knowledge of specific techniques capable of providing the required degrees of reclamation.

A specific interim permit system may work, but it must tie the land to the company for relative long periods of time in the West.

The oft-spoken threat that Colorado, Wyoming, and Montana coal areas will become another Appalachia, as Representative Hechler said the other day, is, I believe, a deceptive statement because the situation in the Western States is, in fact, somewhat worse form the standpoint of reclamation alternatives, economic base, potential losses of water and land value.

Thank you.

Senator METCALF. Thank you very much, Dr. Curry. That is rather alarming testimony. I gather it is your opinion that we cannot reclaim this land in the West?

Dr. CURRY. I don't mean to be an alarmist. If my statements do come out sounding relatively alarming——

Senator METCALF. I said it was alarmist, you didn't.

Dr. CURRY. What I am trying to say is that reclamation in the West requires—it's a different ball game. It requires a different group of ways to go about it and we are nowhere near along the road as far as we are in the East toward developing these reclamation procedures.

We have been hearing testimony about how bad things are in the East. I suggest that if we use this comparison and extend it, we are going to be in very severe trouble in the West.

It is indeed true that reclamation efforts in the West—and by "reclamation" I define it as self-sustaining—have, to date, not been successful. This doesn't mean that we can't do it. But, I suggest geologically it is going to take a much longer period of time.

And, therefore, the legislation which is difficult—it's difficult to legislate time, and it becomes even more difficult when we move to the West where, instead of talking about a 10-year period of stewardship, we are talking about a hundred-year period required stewardship of the land.

What companies will exist for 100 years? We will be through our fossil fuel bulge in that period of time, and the companies will be out. It is a difficult situation.

Senator METCALF. However carefully we draft legislation for the West, you are telling us that, in your opinion, as a chemist and ecologist and a geologist, that you don't know how to reclaim land in the West?

Dr. CURRY. I'm afraid I have come all the way here to say that, yes.

Senator METCALF. And, if we open up western lands to strip mining, we just don't know enough about it to know what we are going to do the ecology of that area in the next 100 years at the present time?

Dr. CURRY. Right. We do know something in some areas about what I would call temporary reclamation and we can assess costs of this temporary reclamation. We can say that given a certain set of climatic conditions and given availability of water in perpetuity in the future, we can reclaim land so that if there is a certain crop or a certain grazing potential in x number of months, and that sort of thing, this is indeed possible. And, if we wish to define reclamation as that, it is possible.

But, that kind of reclamation is a vicious cycle; wherein once you get into it you have to keep putting energy into it to keep it moving. It isn't something that you do, walk away and leave it.

The reclamation we are practicing in the West, or attempting to develop practices for at present, is that energy intensive reclamation or money intensive reclamation that will require a considerable future appropriations to maintain.

Senator METCALF. Dr. Curry, I was in the legislature in Montana in 1937, and I used to observe the gold dredges operating there, and I thought, "Why can't they take the topsoil and set it aside and then put it back on top and restore some of that land?"

The mining interests, just as they have now, came in and said, "We can't do that. We can't set aside topsoil."

But, you're telling me that it wouldn't have made any difference out there.

Dr. CURRY. In the case of gold dredged land, it probably wouldn't have because it was so thin to begin with. But, that doesn't mean that it can't be beneficial in some areas. We just don't know where all those areas are.

I don't mean to just cast negative feelings over the whole project and reclamation efforts in the West. They must continue, and we must get tight legislation. I would suggest there are people, such as Dr. Harold Malde of the Geological Survey who are working on specific language which really will tend to direct this in the right way.

Senator METCALF. And, will help us in getting specific, tight restrictions in legislation?

Dr. CURRY. Right.

Senator METCALF. Where do we get the money for the necessary research?

Dr. CURRY. The money is in Montana and Wyoming. The money is under the ground right now. All we need to is put the legislation in in such a way that that research is necessary to develop techniques. In other words, an interim permit system, or something to that effect.

I don't feel that Congress has to appropriate the money. I think the money should come from the sale of the fuel resource. After all, we are selling coal for $6 a ton in the East versus $2 a ton in Montana.

We are talking about coal that is indeed capable of sustaining an additional market in term of at least a dollar for research and reclamation.

Senator METCALF. I hope you are properly frightened, Senator Hansen.

Senator HANSEN. I am completely speechless, Mr. Chairman. I appreciate the presence of Dr. Curry here this afternoon.

Quite a few years ago, I was asked to accompany the American Society of Range Management—I probably have the title mixed up a little bit—because I happened to have a degree in agriculture from the University of Wyoming, and was presumed to know something about that area where the society met.

It was my responsibility to go along on a field tour of the scientists and experts for about 3 days. I'll never forget driving through the National Elk Refuge, Doctor, from Jackson, Wyo., on north. With me, in the pickup, was one of the head people with the Forest Service. The dean, at that time, as I recall, of the school of forestry from Utah State University was also there.

Anyway, we were in my pickup. As we were going through the refuge, we saw a couple of low buttes that were chalky in appearance. They were just as bare as anything could be. One of the persons said to the other in the car, "Here is a classic example of what happens when animals are concentrated in an area in the wintertime in overgrazing."

Obviously, with the southern exposure, bearing in mind that the prevailing wind pattern at Jackson's Hole is from the southwest to the northeast, this seemed logical to me. I didn't comment because I thought that their conclusion was quite apparent.

The next day, as we began our tour, we gathered on top of Snow King Mountain, which was serviced by a chair lift. From that vantage point much of the valley could be seen.

The person who spoke first was, Dr. J. David Love. I am sure that some of you are colleagues or former students and admirers of his. He was pointing out some of the interesting geological figures or fixtures of the area, and he said, "If you will look north, now, and slightly to the east, you will see two very prominent white buttes here in the refuge.

"The interesting thing about that outcropping there is that it is some of the newest soil in Wyoming, and uniquely enough it has no ability to support any vegetative life." He said, "Wherever you find it, it's just as bare as it is here," and then he spoke about two or three similar outcroppings in Yellowstone.

I don't have any questions, Mr. Chairman. I do appreciate the testimony given by the Doctor. I intended to hear every word of it. I'm sorry I wasn't here when he began. Thank you.

Senator METCALF. Thank you very much, Senator Hansen.

Dr. Curry, I am proud that you were here from the State of Montana. I think that you have made a significant contribution to the distinction between reclamation and restoration in the East and in the older geology that we have out West.

We will certainly look to Dr. Malde and anyone else who will help us draft legislation to protect—that will protect us out in Montana and Wyoming and Arizona in that very fragile area in which we live.

You have certainly given us something to think about considerably, and we look forward to working with you. Thank you very much.

Dr. CURRY. Thank you.

[The complete statement of Dr. Curry follows:]

RECLAMATION CONSIDERATIONS FOR THE ARID LANDS OF WESTERN UNITED STATES

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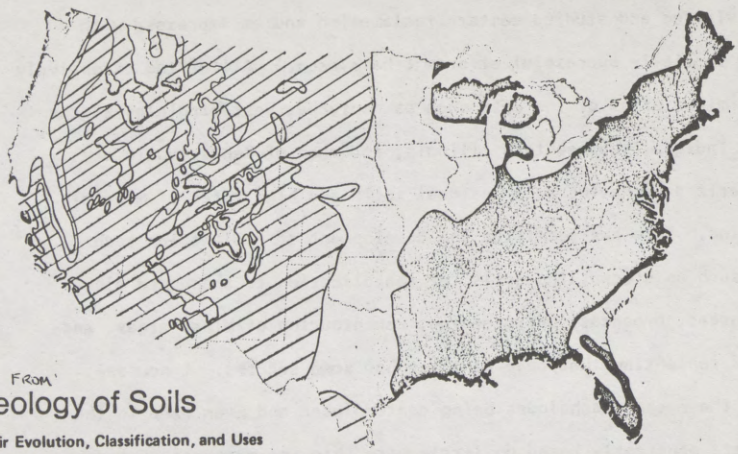
-- Testimony for U.S. Senate Interior Hearings, March 15, 1973 --

I am Robert R. Curry, an Associate Professor of Environmental Geology at the University of Montana. My professional field of specialization is in the area of the relationships between the uses of land, its biologic productivity, and the status of geologic evolution of the land's surface, including its soils. My graduate training is in plant ecology and geology and my doctoral degree is in geology and geophysics from the University of California at Berkeley.

My comments here will be specifically directed toward an understanding of the multiple factors that need to be considered when dealing with problems of land reclamation in the western United States to the extent that these problems are different from those encountered in the more humid regions of eastern United States. Specifically, these comments apply to the diagonally hatchured area of the following map. These are specifically the areas of the conterminous United States where present potential ground-level evaporation during a given year exceeds, on the average, the total precipitation at ground level for that year. This includes virtually



FROM
Geology of Soils
Their Evolution, Classification, and Uses
CHARLES B. HUNT, The Johns Hopkins University
1972

all areas in the west where open-pit or strip-mining is now going on or is contemplated and excludes only those portions of Oregon and Washington lying west of the Cascade crest, a portion of northwestern California, and the higher mountainous areas of California, Colorado, Wyoming, Idaho, and Montana. I estimate that over 95 percent of the economically recoverable fossil fuel resources of western United States, such as coal, oil shale, and natural gas are found in these arid areas, as well as the vast bulk of the economically recoverable gravels, gypsum, bentonite, copper, uranium, and other potentially strip-mined or surface mined deposits.

Reclamation conditions, procedures, and successes in eastern United States, particularly in Appalachia have no bearings on conditions to be expected in western United States. The situations are wholly different.

I have visited and studied eastern reclamation and am impressed with the few partially successful efforts I have seen.[1] All of the extensively surface mined areas of the east such as Kentucky, West Virginia, southwestern Indiana, southeastern Illinois, and much of Pennsylvania are characterized by having deep residual soils and high rates of mineral weathering. This has permitted the development of reclamation techniques such as stockpiling soils for reapplication to abandoned disturbed areas, broadcast hydroseeding, recontouring of mined areas, and forms of replanting that have at times had some success. I now see many of these same techniques being contemplated and even used in the arid west, apparently based on little more than the measures of success in the east. This is disasterous.

Reclamation in the west differs from that in the east primarily because of aridity during at least summer months, and because the ages of the land surfaces in the west are much less than those generally found in the surface-mine areas of the south and east. For instance, the hill slopes of much of Appalachia, with precipitation to evaporation ratios of 4:1, have been developing since mid-Tertiary geologic time, 20 to 30 million years ago. Eastern Montana, on the other hand, with a precipitation to evaporation ratio of about 1:10, possess a weathering profile but 5 to 15 thousands years of age. The Four Corners area of north-

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[1]For example, see the work of Ronald D. Hill, Environmental Protection Agency, Cincinnati, Ohio: 1971, Restoration of a Terrestrial Environment--the Surface Mine: Assoc. of Southeastern Biologists Bull., v. 18, no. 3, p. 107-116.

eastern Arizona has a precipitation to evaporation ratio of 1:50 or more, virtually precluding any hydrolytic mineral weathering under present climatic conditions. What this means is that the ground surface, once disturbed, cannot recover to the present state of succession or subclimax without extremely long periods of geologic time--many times longer than we expect man to inhabit the earth.

In recent years geologists, soil scientists, and paleoclimatologists have learned that over much of the arid west there appear to have been brief geologic periods favorable for soil formation, while during the bulk the times of evolution of our land surfaces, soil development is so restrained that the land surface can merely cycle plant nutrients between existing soil minerals, soil biota, and sparce plants in a very delicately balanced fashion. This finding has come as a considerable shock to many because it means that we are now living in a period of time when natural conditions cannot be expected to maintain present ground covers should those ground covers and their geologic substrates be disturbed. In essence, our soils and their plants and animals are fossils which are relicts of short periods of wetter conditions in the past 10,000 to 1 million years. For instance, in the Great Basin, the desert vegetation is supported by a soil formed in two short periods about 1,500 and 5,000 years ago. These are called the Drain and Toyeh soils and correlate geologically with similar relict surficial soils in Utah, Colorado, Wyoming, New Mexico, Arizona and California where these have been investigated.[2] These are not forming today and cannot under today's climatic conditions.

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[2]Birkeland, P. W., D. R. Crandell and G. M. Richmond, 1971, Status of correlation of Quaternary stratigraphic units in western United States: Quaternary Research, v. 1, p. 208-227.

In the east the deep Tertiary weathering profiles have yielded soil materials 100 or more feet in depth and relatively homogenious throughout with the exception of the organic-rich top few feet. Much strip and contour-mined land in the southeast has merely to be recontoured and a few feet of the weathered mantle bulldozed over the surface to be able to support a sometimes lush vegetative cover where acid drainage is controlled, fertilizers are used, and seeding is careful. In the west, the total soil depths (and easterners would not even call much of our plant supporting media soil) are on the order of inches and zonation of minerals and living plant and animal matter is extreme. Stockpiling soil and recovering the lands for reclamation may in some cases do more harm than good, where for instance the calcium carbonate layer underlaying much arid-land soil is mixed with the nitrogen-rich organic layer and the biologic carbon-nitrogen balance destroyed.[3] In arid lands, where evaporation exceeds precipitation, the soil acts like a great wick permitting the minerals dissolved in the soil water to precipitate in the soil as the water evaporates. Since the evaporation is at the surface, the materials are deposited near the surface at depths that are a function of the geochemical conditions within the evaporating soil moisture column. It is a well-known practice of analytical chemistry to place a strip of filter paper in a solution of chemical compounds to be separated and to let those compounds wick up the filter paper, ultimately to be deposited at various levels about the water surface with each chemical species at its particular predictable level. The same happens in soil in arid regions resulting in a delicately

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[3]Unpublished work of Richard F..Hadley, U.S. Geological Survey, Denver, CO 80225.

balanced biogeochemical segregation within the soil profile. To destroy this segregation by homogenizing the top few feet of surficial substrate is most often counter-productive from the biologic point of view, as it witnessed by those attempting to till lands in arid regions and finding that progressively higher fertilizer and gypsum treatments are necessary and that ultimately production ceases unless soils can be leached with artificially-developed water sources. The single exception would be the dry-land wheat farms of eastern Washington developed on a wind-transported deep soil mantle derived from glaciers but even here upset by the biogeochemical balance requires enormous expenditures of fertilizer in progressively increasing quantities.

In the east, where fresh, unweathered geologic materials are brought to the surface in rare cases and reclamation must proceed without benefit of soil materials, the warm temperatures coupled with high summer humidity and high ground moisture levels permit some species of plants to survive and to produce their own soil in periods of time as short as a human lifetime. However, in the west, unless precious water is imported and the sites are watered for 200 to 2000 years to simulate the naturally wetter conditions during the soil-forming periods, reclamation to the point of self-sustenance is impossible. Suggestions that partly weathered materials be imported, perhaps from the east, and augmented with organic matter such as sewage sludge for the purpose of manufacturing western soils may be usable alternatives and need study. To my knowledge, this is not being done in the arid west today. If facilities for export of coal or other bulk commodities are to be contemplated, then it may not be economically

impossible to require that soil components be mined elsewhere and shipped back to the site of the original surface mining, but, of course, this will greatly increase the acreage of land disturbed by a given mining action.

Water is undoubtedly the key to reclamation in the west. To recover a viable vegetative covering and to protect surface and groundwater quality which is of the utmost value in the west, it will generally be necessary to water and fertilize carefully the areas being reclaimed. The costs of this water and the costs of the long periods of time necessary to facilitate self-sustenance must be borne in mind by those contemplating reclamation, but I can nowhere in the west find evidence of internalization of these high costs. Since the weathering processes are so much slower than in the east, times for successful reclamation in the west are very long and specialized land management must be practiced many decades to centuries at minimum. Introduction of water and fertilization to the immature soils of the west will result in the growth of highly palitable forbs that will tend to concentrate grazing animals, both wild and domestic in the areas undergoing reclamation for at least the first century after these efforts are underway. This places an additional burden on the land and those involved in reclamation requiring the range managers to fence reclaiming areas for long times to restrict grazing pressures.

In my opinion, the times allowed for reclamation ~~and~~ of the monies allocated for such reclamation through state legislation in the west are very inadequate. In no instance that I can find are present laws applying to western reclamation adequate to insure minimal sustained recovery. When one considers the rising costs of western water and fertilizer and the rising values of maintained water quality, I estimate that costs of reclamation in the west are 10 to 100 times as great as those on steep, contour-stripped lands in the southeast.

I have been asked to discuss, in addition, the reasons for concern for reclamation of western range lands or desert lands. Why are these of national

value, and are the costs worth the effort? From the energy standpoint, I do not think that the costs are worth the effort. Deep mining of fuels becomes economically more favorable when reclamation costs are truly and accurately considered. It is certainly true that one acre of Arizona mesa-top or one acre of Wyoming grazing land could not bring the same real estate prices as one acre of suburbs in New Jersey or one acre of farm lands in Pennsylvania, but neither of the latter can exist without the former in perpetutity. One can be easily misled looking at only the land surface. Restoration of an area to self-sustaining biologic productivity creates a parcel of land that can absorb and collect water free of impurities harmful to man and other species. Thus the watershed values are in many cases greater than those for grazing for the few animal-unit-months than an acre of the arid west may provide each year. Only a few acres of watershed can pollute a river and costs for development of alternative water systems are very great in the west. Thus the income from one acre of undisturbed land in the west may be low but the cost to the people of a wide area of one acre of disturbed and unreclaimed land may be high. The following are minimally necessary for western reclamation:

1) Successful reclamation should be defined as restoration to a state under which vegetative cover and nutrient cycles are as 'closed' as before man-caused disturbance.

2) Stable soil-vegetation relationships imply sub-climax vegetative cover that is adapted to the range of extremes, not means, of climatic and hydrologic conditions that have existed and may reasonably be expected to exist in the western U.S.A. for a period of several thousand years.

3) Introduced species may permit increased rates of succession to a stable community, but, ultimately, one would anticipate that the dominate cover should be made up of native species of those particular genotypes that have evolved in the area. This means that a nursery or seed source of these genotypic varietals must be available and must be site specific to the particular microsites being reclaimed, not just to the southwest or a particular coal region.

4) The key to reclamation is not in the management of the ground cover, but in the management of the soil-plant combination best adapted to the site. This means that one should not strive toward most rapid growth or most vigorous green, but should strive toward that combination of plants, animals, soil, and soil micro-organisms that will permit long-term adaptation to expectable extremes of site climatic and other conditions.

5) Soil is not something that can be stored in a pile while mining goes on and then spread back over the ground. Soil is a living biogeochemical substrate composed of partly weathered and stratified minerals, delicately bound mineral nutrients that are available to plants upon demand, but not available to leaching rainwaters, and living and dead organic substances and organisms that participate in the nutrient cycling between plant and substrate. The exact stratigraphic order of each 2-4" segment of the top foot or more of the soil must be preserved to facilitate reclamation to a stable community, and it must be kept viable. It has taken at minimum 10,000 years for the soil and its inhabitants to develop in eastern Montana and this soil is today still evolving.

6) To spread the so-called top-soil back over the ground has demonstratably increased the rate of restoration of lands in arid areas. However, part of the reason for this increase is that the homogenized topsoil behaves just as does freshly ploughed virgin land. It has its nutrient balance structures broken and releases its nutrients in excess to rainwaters, thus producing vigorous plant growth, especially of non-native species and weeds. This makes for high farm yields for several years, or in the case of mined land, creates nice places to take color photographs and promotional field trips, but it defeats the natural nutrient cycling mechanisms and will ultimately result in a reduced vigor, reduced population stability, and retarded succession relative to adjacent undisturbed areas. Thus, 100-years hence, the "reclaimed" lands will be less vigorous than those lands that have been undisturbed. Reclamation implies long-term management to insure population stability. Succession accompanying restructuring and renewed weathering balances in the soil take at least hundreds of years in the arid west.

7) To "upgrade" the land uses through reclamation to different base conditions will generally require more water than originally available at the site and may require fertilization with imported nutrients. Both of these actions should be avoided at all costs since

they ultimately will impose an almost limitless burden on the company or state agency responsible for the reclamation. Neither water nor fertilizers are available in unlimited quantities and once conditioned to their use, the communities that develop will need them continuously, while the prices for such commodities will increase through time.

8) Reclamation implies replacement of the original water-holding capacity of the soil. This can be done either by preserving the soil structure and density--a virtual impossibility using presently available earthmoving equipment, particularly that associated with coal mining--or by artificially "remanufacturing" a soil using substances such as sewage, sludge or other organic wastes to reconstitute the stripped soil. Such manufactured soils may work, and may ultimately speed recovery of a natural soil profile; but we are not, to my knowledge, conducting the necessary experimentation to permit development of such procedures without possible negative side effects.

9) We at present completely lack the necessary base-line data upon which to assess or conduct reclamation. We need careful studies of ecotypic and genotypic variations in the native and introduced species being considered for reclamation and we need sources of seed for those genotypes ultimately selected. We need observations of the year-to-year differences in extremes of environmental conditions that may reasonably be expected in the arid west, a region of extreme variation due to its severe continental climates. We need data on the effects of fertilization and irrigation on long-term soil fertility under proposed reclamation conditions, especially under the influence of airborne wastes that can be anticipated during the short span of development of these coal reserves (100 years) and under the influence of surface and groundwater changes in quantity and quality that we can anticipate associated with the mining.

In summary, our present research efforts and knowledge of reclamation procedures applicable to arid Western United States are wholly inadaquate upon which to base measures of success or failure of reclamation efforts. We need very tight reclamation legislation specific to those portions of the U.S. with precipitation less than evaporation and we need it now. This legislation should specify carefully the precise characteristics to be restored such as suggested by Harold Malde of the U.S. Geological Survey, Denver Federal Center, and should simultaneously stimulate research to gain knowledge of the specific techniques capable of providing the required degrees of reclamation. -END

Senator METCALF. Senator Wallop, we are delighted to have you here to make your report on the Wyoming Legislature and the situation there. I know that both of us welcome you.

Senator Hansen, would you like to extend a special welcome to your colleague and friend from Wyoming?

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

The chairman and I have been engaged in a very friendly rivalry for some time, debating the relative merits of the Montana and Wyoming laws.

A few days ago, your Governor came in and wasn't too inaccurate when he said that yours was the best reclamation law of all the 50 States. He only missed it by one, and here to prove my point this afternoon is a very good friend of mine, the distinguished legislator from Big Horn, just outside of Sheridan, Wyo., a man not unfamiliar with Montana. I think it is particularly appropriate that he be given this opportunity now to testify.

I am sure that with the presentation by your distinguished Governor, followed now by a presentation from Senator Malcolm Wallop of Wyoming, we have exhibited what can be done at the State level, given the proper incentive and the knowledge and drive and determination to bring it into being.

I am sure that Senator Wallop would be the first to say that he is not completely happy with this bill. But, being a legislator himself, he shares our frustrations and our willingness to recognize, as we all must, that none of us in this legislative arena ever gets exactly what he would like to have. I am pleased, indeed, to welcome Senator Malcolm Wallop from Wyoming.

Senator METCALF. Let me welcome you again.

You know that you people down in your area in Sheridan, we regard that as an extension of Montana. You are surrounded by mountains and don't get into the rest of Wyoming. So, at least you are an adopted Montanan, and let me welcome you here on behalf of the people of Montana.

Senator WALLOP. Thank you very much, Mr. Chairman. I don't see how I could be more welcome unless I was home.

STATEMENT OF HON. MALCOLM WALLOP, STATE SENATOR, BIG HORN, WYO.

I will, as others have done, reduce the prepared remarks here to those points which I think are significant, and which probably have either been only grazed upon or have not been covered.

By profession, I am a rancher, having been in the business since graduating from college, and military service about 16 years ago.

My family is not new to my area of the West, as my grandfather immigrated to the area of the Montana-Wyoming border in 1883, and not too long after that, he settled in Big Horn, Wyo., which has been home and life to three generations of us with the fourth rising fast. This is only meant to imply that my roots are deep in the West, deep in Wyoming, and deep in the land.

In Wyoming, our "in-session" legislative work is over for the year. One of our accomplishments was the creation of a State department of

environmental quality. It is not a model act, nor the place at which we hope to stop and breathe for a while, but it is a start.

One of the sections of this department has control over mined land reclamation efforts in our State. These surface mining provisions are something of a collection of ideas from three bills introduced in the session. One of the bills was mine.

Let me tell you of the difficulties we had trying to make headway and good legislation in the absence of a clearly defined Federal policy.

I started writing my bill something over a year ago, and obviously it was not a singular pearl of great mining legislation, conceived on a lonely purple hill by the resident rancher-senator. Rather, it was the result of conversations, study of other State laws, some very useful and timely input from a young Scranton lawyer, Ernest Preate, Jr., whom I understand is not a stranger to some of you. It came from going to mines and listening to industry people say that a good job was possible and how. At the time, they didn't know I was trying to write mining legislation, so they told me more than they probably would have otherwise.

In short, it came from a lot of States, a lot of people, and a lot of company men, all compiled and presented in a form similar to some of the proposals floating around this Capitol.

I wrote it because I was worried, and because I decided that a care and love for our State demanded action. Then, too, I did not know who in the State would write it, except the Association of Miners, into whose hands we had fallen once before. They did not disappoint.

Second, as a conservative, any sort of unplanned, uncontrolled, futureless change, with no proposals for retribution, except a pitful look in Washington's direction and a plea, "Can you spare a little to put our lands back? We seem to have let it go a bit beyond our resources," made the great alarm ring pretty loudly.

You know, in Wyoming, we Republicans march up and down with little brass bands, playing the "Anthem of Fiscal Responsibility." To look the other way, knowing of the full and fantastic mineral potential and its overpoweringly imminent development seemed certain at least to change their tune, if not muffle them forever.

If it now sounds strange to you that this little duck has come quacking to Washington, asking for Federal guidelines in the area of surface-mining legislation, let me hasten to explain a few things.

First of all, something in the neighborhood of 50 percent of Wyoming's surface belongs to the Federal Government, and in excess of 70 percent of our mineral wealth rests in the same hands.

So, like it or not, one of us is a partner to the other in these ventures. In this instance, half a loaf will not be better than none, because your dough and ours intermingles from the mountain tops, to the river bottoms, and across the plains.

We must have you at least as strong as we are, and speaking personally, I would say that you are the only body which can get still stronger legislation quickly enough to accomplish anything.

Wyoming is on the threshold of an endless variety of surface-mined mineral development. There are vast fortunes to be made out there, and they will be. We are not alone in the West. All of us who share our lands with the Federal Government need strong action quickly, so

that we do not ask of those who come after us that they pick up the tab of our self-indulgence in low taxes and cheap energy.

Our biggest problem in the void created by the lack of Federal intent was one of acquiring and distributing knowledge to a people large unaware of the consequences of inaction. It was not that they did not care enough to create political pressures in behalf of strong legislation, but rather that they could not conceive of the dimension or impact of what is coming.

May I add here as a quick aside, that reclamation may well be the least of our worries if the social and economic impacts are not also considered.

Many Wyoming legislators operating in this void had a few of us to listen to, and an anxious industry is in most instances loathe to be told how, when, or where. By and large, to tell any westerner that he might share a problem with the East, or that what happened to Appalachia is not only conceivable but probable, is to evoke disdain as well as disbelief.

To begin with then, the industry had it all over us in credibility. Some very good people worked many discouraging hours trying to convince the skeptics that the Government did intend to lay down guidelines, and strong ones, and that we hoped and believed that the primary enforcement could be left to those States able to demonstrate clear ability and intent. We hope that our beginning and that of Montana is an obvious declaration.

I am aware of the difficulty in writing—I want to go back a second.

First off, we need a broadly written bill, covering all minerals, and giving primary enforcement powers to those States with the capacity to enforce, and a reserve club held in your hands to see that it is a satisfactory enforcement.

Don't, whatever you do, have different rules for your ground and ours. I am aware of the difficulty in writing reclamation goals broad enough to fit the country, yet specific enough to be useful.

The variety of climate and terrain in just Wyoming made ours a difficult task. This, too, is where I reason that enforcement nearly has to be left in the States in order to usefully determine how your standards are to be met within their climate, terrain, and reclamation goals.

But, reclamation and pollution prevention standards are basically engineering problems, as opposed to goals and impacts which are as varied as the States. You can write reclamation standards for the country.

I think all surface mining must be conducted on a permit basis as the only real control. Primary in the information required should be the record of the operator. Those who cannot mine satisfactorily in New Mexico or Pennsylvania are not to be allowed to try their luck in Wyoming. This will encourage good miners to conduct sound operations wherever they may be.

Indeed, before you ever get to reclamation, you must decide if it is possible to mine an existing piece of ground with existing technology so that the mining itself will not cause irreparable harm. In no place should an irreplaceable surface value be mined from the surface.

Applications, therefore, must include a reclamation plan, and to be acceptable in any degree, it must be demonstrated that whatever

reclamation goals may be proposed are achievable. These goals, then, must be acceptable to the State. If we are to put genuinely acceptable reclamation goals in front of us, we will also find certain areas in each State which are unreclaimable.

Your bill should state that if experience has shown certain environmental situations to be unreclaimable, then that should be declared and no surface mining allowed.

Any future use must be at least as high as any previous use, and must be productive, safe, and permanent, and above all, acceptable to the inhabitants to be reclaimed.

If water is to be stored, it must be safe, pure, and able to support wildlife. If grass is to be grown, it must be edible, perennial, and stabilizing.

Let me state here that there is one thing which no one knows or is ever likely to know how to reclaim. That is the underground water courses and storages which are, to some extent, mysterious, to some extent unknown, and to any extent irreplaceable; and to our semiarid world, the life blood of our existence. Take care, before you allow them to be damaged.

Perhaps the most important thing that has been talked of here, and we addressed it not long ago, is the right of the surface owner to be recognized as a participant in the decision of whether or not the surface is to be mined.

The supreme courts of at least three States, Pennsylvania, West Virginia, and Colorado, have recognized this right. They held, in essence, that mere possession of the mineral estate in the absence of any language in the deed implying the right to surface mine, does not grant access to the minerals through the destruction of the surface.

The Wyoming constitution provides that no surface property may be taken except for public rights-of-way, ditches, flumes, and reservoirs. It is imperative that you address this point in Federal legislation.

I think one more thing should be addressed. If the States or the Federal Government have the right to declare any surface too valuable to mine by surface methods, what manner of compensation is to be made, by whom, and for what reasons to the owner of the mineral estate?

In Wyoming, there are already Federal coal leases on ground that should be saved from surface destruction by reason of its historic, archeological, agricultural, or scenic value. In my opinion, if it is a Federal lease or right, the Federal Government should have the obligation to adjudicate any retribution and also to pay the same.

Mr. Chairman, to summarize, we have had a hard job operating in the void, as I am sure the legislature in your State did, too. For those States with large blocks of Federal lands and even larger Federal mineral holdings, we need strong, broad Federal legislation and we need it quickly.

I am aware of another bill, other than S. 425, which is ready for introduction and which perhaps more nearly meets my thinking. It seems perhaps more complete and yet flexible enough to meet the requirements of the country as a whole. Whatever happens, we need your surface in our State regulated now.

If we are going to avoid overreaction in either direction, time is running out for sensible legislation. It can avoid abolition, and it can avoid a desperate swing in the other direction caused by critical shortages and overpowering demand.

It can be a breathing place on the way to useful, reasoned, national policies on the value, production, and use of energy. It can be a breathing place while new and more efficient uses for this energy can be researched and developed, as they must be, soon.

Thank you, sir.

Senator METCALF. Thank you very much, Senator. A very able and considered and helpful statement.

[The statement of Senator Wallop follows:]

STATEMENT BEFORE THE SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE

BY
SENATOR MALCOLM WALLOP
BIG HORN, WYOMING

15 March 1973

Mr. Chairman, my name is Malcolm Wallop, and I am a state senator representing Sheridan county in the Wyoming legislature. I am a Republican. I have prior service of two terms in the Wyoming House of Representatives and am in my first term in the Wyoming Senate. If I were to classify myself in the political spectrum, I would say that I was mostly conservative.

By Profession, I am a rancher, having been in the business since graduating from college, and military service about 16 years ago. My family is not new to my area of the west as my grandfather immigrated to the area of the Montana Wyoming border in 1883, and not too long after that he settled in Big Horn, Wyoming which has been home and life to three generations of us with the fourth rising fast. This is not meant to be an "I came on the Mayflower" type of self introduction, but merely to express that my roots are deep in the west, deep in Wyoming, and deep in the land.

In Wyoming our 'in session' legislative work is over for the year. One of our accomplishments was the creation of a State Department of Environmental Quality. It is not a model act, nor the place at which we hope to stop and breathe for a while, but it is a start. One of the sections of this department has control over Mined Land Reclamation efforts in our state. These surface mining provisions are something of a collection of ideas from three bills introduced in the session. One of the bills was mine. Let me tell you of the difficulties we had trying to make headway and good legislation in the absence of a clearly defined federal policy.

I started writing my bill something over a year ago, and obviously it was not a singular pearl of great mining legislation concieved on a lonely

purple hill by the resident rancher-senator. Rather it was the result of conversations, study of other state laws, some very useful and timely input from a young Scranton lawyer Ernest Preate, Jr. whom I understand is not a stranger to some of you. It came from going to mines and listening to industry people say that a good job was possible and how. In short, it came from a lot of states, a lot of people, and a lot of company men all compiled and presented in a form similar to some of the proposals floating around this capitol.

I wrote it because I was worried, and because I decided that a care and love for our state demanded action. Then too, I did not know who in the state would write it, except the association of miners into whose hands we had fallen once before. (They did not disappoint.) Secondly, as a conservative, any sort of unplanned, uncontrolled, futureless change, with no proposals for retribution except a pitiful look in Washingtons direction and a plea, "Can you spare a little to put our lands back? We seem to have let it go a bit beyond our resources." made the great alarm ring pretty loudly. You know, in Wyoming, we Republicans march up and down with little brass bands playing the Anthem of Fiscal Responsibility. To look the other way, knowing of the full and fantastic mineral potential and its overpoweringly imminent development seemed certain at least to change their tune, if not muffle them forever.

If it now sounds strange to you that this little duck has come quacking to Washington asking for federal guidelines in the area of Surface Mining Legislation, let me hasten to explain a few things. First of all something in the neighborhood of 50% of Wyoming's surface belongs to the federal government, and in excess of 70% of our mineral wealth rests in the same hands. So like it or not one of us is a partner to the other in these ventures. In

this instance half a loaf will not be better than none, because your dough and ours intermingles from the mountain tops, to the river bottoms and across the plains. We must have you at least as strong as we are, and speaking personally, I would say that you are the only body which can get still stronger quickly enough to accomplish anything.

Wyoming is on the threshold of an endless variety of surface mined mineral development. There are vast fortunes to be made out there, and they will be. We are not alone in the west. All of us who share our lands with the federal government need strong action quickly, so that we do not ask of those who come after us that they pick up the tab of our self indulgence in low taxes and cheap energy.

Our biggest problem in the void created by the lack of federal intent was one of acquiring and distributing knowledge to a people largely unaware of the consequences of inaction. It was not that they did not care enough to create political pressures in behalf of strong legislation, but rather that they could not conceive of the dimension or impact of what is coming. May I add here as a quick aside, that reclamation may well be the least of our worries if the social and economic impacts are not also considered.

Many Wyoming Legislators operating in this void had a few of us to listen to, and an anxious industry in most instances loathe to be told how, when or where. By and large to tell any westerner that he might share a problem with the east, or that what happened to Appalachia is not only conceivable but probable, is to evoke disdain as well as disbelief. To begin with then, the industry had it all over us in credibility. Some very good people worked many discouraging hours trying to convince the sceptics that the government did intend to lay down guidelines, and strong ones, and that we hoped and believed that the primary enforcement could be left to those

states able to demonstrate clear ability and intent. We hope that our beginning and that of Montana is an obvious declaration.

So what do we now need from you? At the very lowest level we must have you at least as strong as we are or all of the efforts will have been fruitless. It would be my hope that you will find this approach unsatisfactory and go for a strong and complete bill.

First off then we need a broadly written bill covering all minerals, and giving primary enforcement powers to those states with the capacity to enforce, and a reserve club held in your hands to see that it is a satisfactory enforcement. Don't whatever you do have different rules for your ground and ours. I am aware of the difficulty in writing reclamation goals broad enough to fit the country, yet specific enough to be useful. The variety of climate and terrain in just Wyoming made ours a difficult task. This too is where I reason that enforcement nearly has to be left in the states in order to usefully determine how your standards are to be met within their climate, terrain and reclamation goals. But Reclamation and pollution prevention standards are basically engineering problems as opposed to goals and impacts which are as varied as the states. You can write Reclamation standards for the country.

I strongly feel that you must require a prospecting permit before such operations, conducted with earthmoving equipment, destroy many thousands of acres without any control and from which no minerals may ever be taken. We have done this in Wyoming and we now need it to cover your lands.

All surface mining must be conducted on a permit basis. It will become the only real control. Realizing that, you must require that permits only be issued after very detailed application. Primary in the information required should be the record of the operator. Those who cannot mine satis-

factorily in New Mexico or Pennsylvania, ought not to be allowed to try their luck in Wyoming. This will encourage good miners to conduct sound operations wherever they may be. Sufficient detail must be required to be able to determine precisely where it will be conducted, how, for how long a time, and who or what will be affected. What is the climate, what is the surrounding terrain, what grows there, what lives there? Will excessive wind or water, or indeed the opposite have an effect. What waters, both surface, and especially in our case, subsurface water will be affected? How will they gain access? Where will they build, store and process? Where will they treat and separate the various piles from top soil to poisonous, dangerous, radioactive, or fire threatening wastes. Indeed, before you ever get to reclamation, you must decide if it is possible to mine a given piece of ground with existing technology, so that the mining itself will not cause irreparable harm. No place with an irreplaceable surface value should be mined from the surface.

The application must include a Reclamation Plan. To be acceptable in any degree it must be demonstrated that whatever reclamation goals may be proposed are achievable. Those goals then must be acceptable to the state. Again, this is an area of extremes. A hillside in West Virginia, green, forested, sloping to a stream presents quite spectacularly different problems from a rolling, barren piece of great plains covered with prairie grasses, antelope and deer, overlying a 120 foot seam of coal, and they from a diatomaceous earth diggings on the California coast. If we are to put genuinely acceptable reclamation goals in front of us, we will also find certain areas in each state which are unreclaimable. Your bill should state that if experience has shown certain environmental situations to be unreclaimable, then that should be declared and no surface mining allowed.

In reclamation there is an area for really imaginative work. At least in

the western states where such enormous seams of coal exist. If it is true that solid waste disposal is an unmanageable problem in some cities, processed solid wastes, NOT GARBAGE, could be returned on the empty trains to fill the giant caverns from which the coal has been removed. Then top soil and fill could return the country to at least a semblance of its former contours.

Any future use must be at least as high as any previous use. It must be productive, safe, permanent, and above all acceptable to the inhabitants. Your standards must therefore insist on stable results and not simply those achieved by artificial water supplies and high doses of artificial fertilizer. Hillsides must be permanent and vegetated, not things which will slide into rivers or create artificial barriers to the natural way of things. If water is to be stored it must be safe, pure, and able to support wildlife. If grass is to be grown it must be edible, perrenial and stablizing. Let me state here that there is one thing, which no one knows or is ever likely to know how to reclaim. That is the underground water courses and storages which are to some extent mysterious, to some extent unknown, to any extent irreplaceable, and to our semi-arid world, the life blood of our existence. Take care before you allow them to be damaged.

A performance bond must be required. It must cover in every way the known cost of reclamation with a fancy dose of protection. Then it must cover the additional costs to the state or federal government of reclaiming land should the operator fail. The bond may be releasable in stages along the way, but it should be held in large portion until stability in the reclamation work has been achieved.

The public, at least that portion of it which resides in the areas or counties in which the work is to be conducted must be allowed to be involved. While some of the public has been irresponsible in its exercise of this priv-

ilege, many arrive prepared, helpful and cooperative. Yes, I know that this is not always the case, and so do I know that it has not always been the case amongst the operators, and representatives of industry. Still I cannot see how such far reaching administrative decisions by appointed officials can be made without involving the public. Obviously, if the public is going to use a hearing, it is going to have to be given a notice adequate enough to prepare itself reasonably well, as the industry may have had years of study leading up to one project. However, it happens, the public will always be least able to state its views because the information, qualified help, and expertise will not be available. For this reason the burden of proving reliability must rest with industry.

Perhaps the most important thing which must be recognized is the right of the surface owner to be recognized as a participant in the decision of whether or not to surface mine. The supreme courts of at least three states, Pennsylvania, West Virginia, and Colorado, have recognized this right. They held in essence that mere possession of the mineral estate in the absence of any language in the deed implying the right to surface mine, does not grant access to the minerals through the destruction of the surface. The Wyoming constitution provides that no surface property may be taken except for public rights of way, ditches, flumes and reservoirs. It is imperative that you address this point in federal legislation.

You must address one more thing. If the states, or the federal government have the right to declare any surface too valuable to mine by surface methods, what manner of compensation is to be made, by whom, and for what reasons to the owner of the mineral estate? In Wyoming there are already federal coal leases on ground that should be saved from surface destruction by reason of its historic, archaeological, agricultural or scenic value. In

my opinion, if it is a federal lease or right, the federal government should have the obligation to adjudicate any retribution and also to pay the same.

Mr. Chairman, to summarize. We have had a hard job operating in the void. For those states with large blocks of federal lands and even larger federal mineral holdings, we need strong, broad federal legislation and we need it quickly. I am aware of another bill other than S. 425 which is ready for introduction and which perhaps more nearly meets my thinking. It seems perhaps more complete and yet flexible enough to meet the requirements of the country as a whole. Whatever happens we need your surface in our state regulated now.

If we are going to avoid over reaction in either direction, time is running out for sensible legislation. It can avoid abolition, and it can avoid a desperate swing in the other direction caused by critical shortages and overpowering demand. It can be a breathing place on the way to useful, reasoned, national policies on the value, production and use of energy. It can be a breathing place while new and more efficient uses for this energy can be researched and developed, as they must be, soon.

Senator METCALF. I think that this would be an appropriate time to suspend before we call on your colleague from Wyoming, and we will be back as soon as possible.

[A recess.]

Senator METCALF. The subcommittee will be in order.

I understand, Senator Wallop, that you volunteered to stand aside for a minute until Senator Hansen gets back. If you will, and don't have a plane to catch, we will call on Drs. Ward and Weaver of the Colorado State University.

Senator WALLOP. I have no plane to catch.

Senator METCALF. Thank you very much.

We are pleased to have you here and we'll try to accommodate everybody. I believe that there are some who have to travel back and forth from airplanes and to far-distant places, and I can sympathize with you.

If you have a prepared statement, go ahead.

Dr. WARD. Since I am the one who has the airplane to catch, I will go first. I made my apologies to Dr. Weaver for having to abandon him.

STATEMENT OF DR. RICHARD T. WARD, COLORADO STATE UNIVERSITY

I am Richard Ward, professor of plant ecology and chairman of the Department of Botany and Plant Pathology at Colorado State University.

My experience in the field includes work in the deciduous forests of Wisconsin and Eastern United States, in the tundra of southeast Alaska and on Amchitka, in the southern Andes, and for the last 16 years in the diverse vegetation and landscape of Colorado.

Currently, I am responsible for the "Natural Vegetation" portion of the "Oil Shale Surface Rehabilitation Study." Both Dr. Weaver and I will emphasize that particular element in the mining pattern.

This study, as you may know, is funded by State, Federal, and private sources, and has been going somewhat less than 1 year.

I am here to testify on the problems of revegetation in the oil shale region and to make some recommendations on proposed legislation.

In addition to "Natural Vegetation," there are parts of this study dealing with one, geomorphology and physiography; two, evaluation of mining techniques; three, chemical and physical characteristics of soils, overburden and oil shale residue materials; four, establishment of vegetation on oil shale and overburden material; and, five, the effect of spent shale disposal and mining disturbance on hydrologic characteristics.

The fact that these studies are recognized to be needed is an indication of the state of the art. There is much we don't know, and it is naive to think that the special problems related to reclamation of oil shale areas will be entirely solved in the 2 or 3 years of this study.

From the standpoint of revegetation in the oil shale region, our understanding of, one, what plant communities to reestablish, and where; two, how to reestablish various plant communities; and, three, how to monitor the apparent success or failure of the effort is funda-

mentally inadequate. We know a great deal about how to produce commercial forest trees and range grasses, but little about growing the abundant shrubs and pinyon-juniper woodland regions.

This indictment does not presume exact recreation of the landscape as it presently is, but does presume an end result that is compatible with the appearance and use of surrounding nonaffected areas.

The inadequacy of our knowledge relates to a simple lack of information on reestablishment of most of the important plants of the area, the special environmental features of the oil shale region, and the projected byproducts of the mining operations.

Let me speak briefly about the oil shale region. Oil shale deposits in the Green River Formation of Colorado, Wyoming, and Utah underlie about 25,000 square miles, with high-grade deposits in about 17,000 square miles.

Western Colorado has, by far, the richest area in the three-State formation; about 80 percent of the high-grade deposits are in Colorado; about 80 percent of the useful oil shale is on public lands.

To understand the magnitude of potential disruption from the mining of oil shale, the following figures may be helpful. A surface mining operation producing 50,000 barrels a day of crude oil will require extraction from 70,000 tons of oil shale a day.

American Metals Climax in Colorado, the third largest underground mine in the world, mines 40,000 tons a day. The spent shale may assume a volume of up to 1½ times the original.

The shale occurs in sedimentary rocks that were deposited 50 to 75 million years ago in lake basins. The main deposit of oil shale in Colorado is in a place referred to as the Piceance Creek Basin. Most of the oil shale occurs between 6,000 and 8,000 feet.

In contrast to other areas of western Colorado, there has not been an uplift of underlying hard rocks through the softer sedimentary rocks. The sedimentary layers lie relatively flat.

However, the Colorado River and its tributaries have sliced into the plateau surface, resulting in deep sculpturing of the plateau matrix. Much of this wind- and water-eroded, semiwilderness has a certain beauty that would qualify it for national park status were it in a less mountainous State.

The area is hot in summer and cold in winter. The precipitation averages 12 to 20 inches per year, with about half of it coming as snow. The growing season is rather short, and evaporation rates during the growing season are high. Summer droughts are fairly common.

It will take the utmost skill and knowledge to revegetate some of those steep, south-facing slopes.

The inadequacy of the information and technology of what vegetation to reestablish, how to do it, and how to monitor its success was all too evident in the Department of Interior's 1972 draft environmental statement for the prototype oil-shale leasing program.

Some generalized vegetation types were mentioned and a few species listed. The complexities of the landscape and the difficulties certain to be faced with the high salinity, boron toxicity, high ph, low nutrition level and other adverse features of spent shale as a substrate were hardly considered.

Called into question is the Department of Interior's in-house ability to do justice to the reclamation of areas with problems as diverse and

difficult as those in the oil shale region—either as overseer of State activities or as the authority directly responsible.

The experience and expertise in such units as the SCS, ARS and Forest Service in the Department of Agriculture argued for giving them a greater responsibility than is indicated in S. 425.

For reasons of comparative expertise and possible conflict of historical interest, the establishment of an Office of Land Use Policy, Reclamation and Enforcement, as proposed in section 202 of S. 425, should be considered for placement in other than Interior. At the very least, the enforcement function of the office should go to the Environmental Protection Agency.

Section 212 of S. 425, dealing with "Criteria for Surface Mining and Reclamation Operations," is impressively worded as to its objectives and requirements.

However, one of the problems with an all-minerals bill is the reduced specificity, and one suspects that the chance for ultimate success in reclamation would increase with an increase in specific criteria.

You may ask what additional details would be useful for vegetation reestablishment. Certainly more is needed than such guidelines as, "Between 7,000 and 8,000 feet, on moderate south-facing slopes, pinyon-juniper is dominant, or in north-facing coves, aspen and Douglas-fir are important."

A complete gradient analysis of various environmental factors and topographic features considered against vegetational response should be established as a base line.

An understanding of the natural successional processes for communities along these gradients should also be incorporated into the set of base guidelines.

The appropriate plant community emphasis for interests such as wildlife, grazing or esthetics and recreation should also be part of the reference base. This information would provide the essential guidelines for "what plans to reestablish."

I would propose that, consistent with requirements for surface maps of geographic and domestic features and vertical cross-section maps of the overburden, mineral seams, et cetera, the reclamation plan for a permit should include in a manner satisfactory to the regulatory authority a characterization of the vegetation and the related environment of the affected area by the following.

One, a map of the existing vegetation overlain on a topographic map of sufficient scale to provide adequate delineation of community types.

Two, a gradient analysis of plant communities in relation to gradients of elevation, degree of slope, direction of slops, soil structure, soil depth, soil moisture, radiant energy and biotic influence.

The point of this is that when one creates a new environment, he needs a way to refer to what ought to be put back. In the standard lesson of pinyon-juniper, "occurs on south-facing slope of a certain degree," but that won't do it. We have to have more sophisticated gradient analyses so that we can say that is a combination of soil factors of gradient input and vegetation. This is what we ought to try to put back in that area.

Third, there ought to be a three-dimensional spatial display of the structure of the plant communities. The reason for this is, as I see it,

if you can assume success if you revegetate and get the plants to grow to a certain level.

But, that is not a plant community. It has a third dimension; that is, to be part of the responsibility in the reclamation so that we really put it back as close as we can to what the surrounding territory looks like.

Along with this, there needs to be an understanding of the natural plant succession. We, obviously, cannot put back all of the present dynamics that occur in these hills. There are some processes that occur naturally. If you establish this, they, in time, will lead to that, and we need to know that so we can predict what might occur.

Finally, a very clear understanding of the life history attributes of the dominant and subdominants of the area needs to be presented so that there is some reasonable chance of reestablishing these various kinds of plants.

There has been, as you may know, an effort, a somewhat major one, on the part of the Cosco Agency to deal with revegetation, but where they have set up their plots and what they have used does not at this time point assurance of success as to the future.

Their plots in a low-valley area may have reached the spent shale greatly, removed the salinity. They have fertilized them heavily, they have irrigated them regularly by hand.

This, obviously, is not what we are talking about for the indefinite future.

A difficult question is how does an authority measure success or the lack of it in revegetation efforts?

Standards of quantitation are fairly easily established for air and water pollution, but to my knowledge have never been employed for revegetation.

The evaluation is necessarily highly subjective, thus who does the job is vitally important.

The key to the success of revegetation efforts lies with the understanding and enforcement capability of State or Federal personnel. standards will in effect be set by them, and not by laws.

A requirement of adequate interdisciplinary expertise in the State and Federal regulatory authorities will not assure success, but failure is almost certain without the requirement.

A point on the performance bonds, mentioned in section 208 and 210 of S. 425 should be assessed and released with a consideration of success over time.

The main portion of S. 425, title II presumes that the technology of reclamation has been worked out, but some recognition of the fact that it is not is found in title IV section 404, where research and demonstration projects may be carried out and supported by the Secretary of the Interior, with an annual budget of $5 million.

This is a most important part of the bill, and unless it is maintained in the bill there is little likelihood that the necessary facts and "know-how" will be acquired for the oil shale problems.

This approach has a precedent in agriculture which should be recalled. Throughout the agricultural area there have been regional branch stations to do research under the particular environmental conditions applied to that area and to provide visible evidence in strain gardens of comparative success to the farm industry.

A comparable regionality is appropriate for mining, for example, the problems of reclamation of coal strip mining in Montana are quite similar to those in northeast Wyoming and the Dakotas. And those problems are different from the reasonably common set of problems for oil shale in the Green River Formation of Colorado, Wyoming and Utah, which are somewhat similar but different.

For reasons of uniformity and equity of reclamation standards some degree of regional overlay ought to be considered in the State-Federal administration of mining reclamation. I suspect that the mining companies would favor this. Their competitive position is then less threatened by diverse standards.

I would also like to speak in support of title III of S. 425 and section 215 which deal with abandoned and unreclaimed mine areas and designation of land areas unsuitable for mining, respectively.

Colorado has some extensive areas of abandoned mine wastes for which there is no chance to establish an obligation on the part of the guilty party. Those landscapes serve only as eyesores.

The legal possibility of assessing other values against those of mining is a most desirable feature of section 215. The San Juan Mountains in Colorado, some of the most beautiful in the world, need to have this asset weighed against increasing mining interests.

There are three small parts of S. 425 which are not pertinent to the essential purpose of the bill and should be eliminated. They are parts 7, 8, and 9 of section 202(c), dealing with inventories and data centers for land use patterns. The ideas are excellent, but out of place, both in the bill and in the Department of Interior.

In summary my primary recommendations are as follows:

One, adequate interdisciplinary expertise should be required in the State and Federal regulatory authorities, and more use of the expertise in the SCS, ARS and Forest Service should be programed.

Two, the enforcement function of reclamation of surface mined areas should rest with the Environmental Protection Agency.

Three, to be eligible for a permit, the applicant should demonstrate a thorough understanding of the vegetation of the area, its relationship to environment and use gradients, its successional and recovery characteristics, and the life history attributes pertinent to reestablishment.

Four, the applicant should also be required to demonstrate revegetation success in environments reflecting the range of natural environments to be expected and without indefinite continuation of artificial cultural practices.

Five, performance bonds should be assessed and released based upon a consideration of success of reclamation over time.

Six, patterned after the success in agriculture, research and demonstration plots for the special problems of reclamation should be established on a regional basis.

Thank you very much.

[The prepared statement of Mr. Ward follows:]

ORAL STATEMENT BEFORE THE SENATE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS, HEARINGS ON MINED-LAND LEGISLATION
MARCH 15, 1973

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE -

I AM RICHARD WARD, PROFESSOR OF PLANT ECOLOGY AND CHAIRMAN OF THE DEPARTMENT OF BOTANY AND PLANT PATHOLOGY AT COLORADO STATE UNIVERSITY.

MY EXPERIENCE IN THE FIELD INCLUDES WORK IN THE DECIDUOUS FORESTS OF WISCONSIN AND EASTERN U.S., IN THE TUNDRA OF SOUTHEAST ALASKA AND ON AMCHITKA, IN THE SOUTHERN ANDES, AND FOR THE LAST 16 YEARS IN THE DIVERSE VEGETATION AND LANDSCAPE OF COLORADO. CURRENTLY I AM RESPONSIBLE FOR THE "NATURAL VEGETATION" PORTION OF THE "OIL SHALE SURFACE REHABILITATION STUDY". THIS STUDY, FUNDED BY STATE, FEDERAL, AND PRIVATE SOURCES, HAS BEEN GOING SOMEWHAT LESS THAN 1 YEAR. I AM HERE TO TESTIFY ON THE PROBLEMS OF REVEGETATION IN THE OIL SHALE REGION AND TO MAKE SOME RECOMMENDATIONS ON PROPOSED LEGISLATION. IN ADDITION TO "NATURAL VEGETATION" THERE ARE PARTS OF THIS STUDY DEALING WITH 1) GEOMORPHOLOGY AND PHYSIOGRAPHY; 2) EVALUATION OF MINING TECHNIQUES; 3) CHEMICAL AND PHYSICAL CHARACTERISTICS OF SOILS, OVERBURDEN AND OIL SHALE RESIDUE

MATERIALS; 4) ESTABLISHMENT OF VEGETATION ON OIL SHALE AND OVERBURDEN MATERIAL AND 5) THE EFFECT OF SPENT SHALE DISPOSAL AND MINING DISTURBANCE ON HYDROLOGIC CHARACTERISTICS.

THE FACT THAT THESE STUDIES ARE RECOGNIZED TO BE NEEDED IS AN INDICATION OF THE STATE OF THE ART. THERE IS MUCH WE DON'T KNOW, AND IT IS NAIVE TO THINK THAT THE SPECIAL PROBLEMS RELATED TO RECLAMATION OF OIL SHALE AREAS WILL BE ENTIRELY SOLVED IN THE TWO OR THREE YEARS OF THIS STUDY.

FROM THE STANDPOINT OF REVEGETATION IN THE OIL SHALE REGION, OUR UNDERSTANDING OF 1) WHAT PLANT COMMUNITIES TO REESTABLISH, AND WHERE; 2) HOW TO REESTABLISH VARIOUS PLANT COMMUNITIES; AND 3) HOW TO MONITOR THE APPARENT SUCCESS OR FAILURE OF THE EFFORT IS FUNDAMENTALLY INADEQUATE. WE KNOW A GREAT DEAL ABOUT HOW TO PRODUCE COMMERCIAL FOREST TREES AND RANGE GRASSES, BUT LITTLE ABOUT GROWING THE ABUNDANT SHRUBS AND PINYON-JUNIPER WOODLANDS REGIONS.

THIS INDICTMENT DOES NOT PRESUME EXACT RECREATION OF THE LANDSCAPE AS IT PRESENTLY IS, BUT DOES PRESUME AN END RESULT THAT IS COMPATIBLE WITH THE APPEARANCE AND USE OF SURROUNDING NON-AFFECTED AREAS. THE INADEQUACY OF OUR KNOWLEDGE RELATES TO A SIMPLE LACK OF INFORMATION ON REESTABLISHMENT

OF MOST OF THE IMPORTANT PLANTS OF THE AREA, THE SPECIAL ENVIRONMENTAL FEATURES OF THE OIL SHALE REGION, AND THE PROJECTED BY-PRODUCTS OF THE MINING OPERATIONS.

LET ME SPEAK BRIEFLY ABOUT THE OIL SHALE REGION.

OIL SHALE DEPOSITS IN THE GREEN RIVER FORMATION OF COLORADO, WYOMING, AND UTAH UNDERLIE ABOUT 25,000 SQUARE MILES - WITH HIGH GRADE DEPOSITS IN ABOUT 17,000 SQUARE MILES. WESTERN COLORADO HAS BY FAR THE RICHEST AREA IN THE 3-STATE FORMATION - ABOUT 80% OF THE HIGH GRADE DEPOSITS ARE IN COLORADO. ABOUT 80% OF THE USEFUL OIL SHALE IS ON PUBLIC LANDS.

TO UNDERSTAND THE MAGNITUDE OF POTENTIAL DISRUPTION FROM THE MINING OF OIL SHALE THE FOLLOWING FIGURES MAY BE HELPFUL. A SURFACE MINING OPERATION PRODUCING 50,000 BARRELS/DAY OF CRUDE OIL WILL REQUIRE EXTRACTION FROM 70,000 TONS OF OIL SHALE/DAY. AMERICAN METALS CLIMAX IN COLORADO, THE THIRD LARGEST UNDERGROUND MINE IN THE WORLD, MINES 40,000 TONS/DAY. THE SPENT SHALE MAY ASSUME A VOLUME OF UP TO 1 1/2 TIMES THE ORIGINAL.

THE SHALE OCCURS IN SEDIMENTARY ROCKS THAT WERE DEPOSITED 50-75 MILLION YEARS AGO IN LAKE BASINS. THE MAIN DEPOSIT OF OIL SHALE IN COLORADO IS IN A PLACE REFERRED TO AS THE PICEANCE CREEK BASIN. MOST OF THE OIL SHALE OCCURS BETWEEN 6 AND 8,000 '. IN CONTRAST TO OTHER

AREAS OF WESTERN COLORADO THERE HAS NOT BEEN AN UPLIFT OF UNDERLYING HARD ROCKS THROUGH THE SOFTER SEDIMENTARY ROCKS. THE SEDIMENTARY LAYERS LIE RELATIVELY FLAT. HOWEVER, THE COLORADO RIVER AND ITS TRIBUTARIES HAVE SLICED INTO THE PLATEAU SURFACE, RESULTING IN DEEP SCULPTURING OF THE PLATEAU MATRIX. MUCH OF THIS WIND AND WATER ERODED SEMI-WILDERNESS HAS A CERTAIN BEAUTY THAT WOULD QUALIFY IT FOR NATIONAL PARK STATUS WERE IT IN A LESS MOUNTAINOUS STATE.

THE AREA IS HOT IN SUMMER AND COLD IN WINTER. THE PRECIPITATION AVERAGES 12 - 20" PER YEAR, WITH ABOUT HALF OF IT COMING AS SNOW. THE GROWING SEASON IS RATHER SHORT, AND EVAPORATION RATES DURING THE GROWING SEASON ARE HIGH. SUMMER DROUGHTS ARE FAIRLY COMMON. THE STEEP, SOUTH-FACING SLOPES MAINTAIN A TENUOUS PLANT COVER, EVEN UNDER CIRCUMSTANCES OF NO DISTURBANCE; ARTIFICIAL REESTABLISHMENT OF VEGETATION ON SUCH SLOPES WILL REQUIRE THE UTMOST SKILL AND KNOWLEDGE.

THE INADEQUACY OF THE INFORMATION AND TECHNOLOGY ON WHAT VEGETATION TO REESTABLISH, HOW TO DO IT, AND HOW TO MONITOR ITS SUCCESS WAS ALL TOO EVIDENT IN THE DEPARTMENT OF INTERIOR'S 1972 DRAFT ENVIRONMENTAL STATEMENT FOR THE PROTOTYPE OIL-SHALE LEASING PROGRAM. SOME GENERALIZED VEGETATION TYPES WERE MENTIONED AND A FEW SPECIES LISTED. THE COMPLEXITIES OF THE LANDSCAPE AND THE DIFFICULTIES CERTAIN TO BE FACED WITH THE HIGH SALINITY, BORON TOXICITY, HIGH pH, LOW NUTRITION LEVEL AND OTHER ADVERSE FEATURES OF SPENT SHALE AS A SUBSTRATE WERE HARDLY CONSIDERED.

CALLED INTO QUESTION IS THE DEPARTMENT OF INTERIOR'S IN-HOUSE ABILITY TO DO JUSTICE TO THE RECLAMATION OF AREAS WITH PROBLEMS AS DIVERSE AND DIFFICULT AS THOSE IN THE OIL SHALE REGION--EITHER AS OVERSEER OF STATE ACTIVITIES OR AS THE AUTHORITY DIRECTLY RESPONSIBLE. THE EXPERIENCE AND EXPERTISE IN SUCH UNITS AS THE SCS, ARS AND FOREST SERVICE IN THE DEPARTMENT OF AGRICULTURE ARGUE@ FOR GIVING THEM A GREATER RESPONSIBILITY THAN IS INDICATED IN S.425.

FOR REASONS OF COMPARATIVE EXPERTISE AND POSSIBLE CONFLICT OF HISTORICAL INTEREST, THE ESTABLISHMENT OF AN "OFFICE OF LAND USE POLICY,

RECLAMATION AND ENFORCEMENT", AS PROPOSED IN SEC. 202 OF S. 425, SHOULD BE CONSIDERED FOR PLACEMENT IN OTHER THAN INTERIOR. AT THE VERY LEAST THE ENFORCEMENT FUNCTION OF THE OFFICE SHOULD GO TO THE ENVIRONMENTAL PROTECTION AGENCY.

SEC. 212 OF S. 425, DEALING WITH "CRITERIA FOR SURFACE MINING AND RECLAMATION OPERATIONS", IS IMPRESSIVELY WORDED AS TO ITS OBJECTIVES AND REQUIREMENTS. HOWEVER, ONE OF THE PROBLEMS WITH AN ALL MINERALS BILL IS THE REDUCED SPECIFICITY, AND ONE SUSPECTS THAT THE CHANCE FOR ULTIMATE SUCCESS IN RECLAMATION WOULD INCREASE WITH AN INCREASE IN SPECIFIC CRITERIA.

YOU MAY ASK WHAT ADDITIONAL DETAILS WOULD BE USEFUL FOR VEGETATION REESTABLISHMENT - CERTAINLY MORE IS NEEDED THAN SUCH GUIDELINES AS: "BETWEEN 7 AND 8,000 FT., ON MODERATE SOUTH-FACING SLOPES, PINYON-JUNIPER IS DOMINANT, OR IN NORTH-FACING COVES ASPEN AND DOUGLAS FIR ARE IMPORTANT". A COMPLETE GRADIENT ANALYSIS OF VARIOUS ENVIRONMENTAL FACTORS AND TOPOGRAPHIC FEATURES CONSIDERED AGAINST VEGETATIONAL RESPONSE SHOULD BE ESTABLISHED AS A BASE LINE.

AN UNDERSTANDING OF THE NATURAL SUCCESSIONAL PROCESSES FOR COMMUNITIES ALONG THESE GRADIENTS SHOULD ALSO BE INCORPORATED INTO THE

SET OF BASE GUIDELINES. THE APPROPRIATE PLANT COMMUNITY EMPHASIS FOR INTERESTS SUCH AS WILDLIFE, GRAZING, OR AESTHETICS AND RECREATION SHOULD ALSO BE PART OF THE REFERENCE BASE. THIS INFORMATION WOULD PROVIDE THE ESSENTIAL GUIDELINES FOR "WHAT PLANTS TO REESTABLISH".

I WOULD PROPOSE THAT, CONSISTENT WITH REQUIREMENTS FOR SURFACE MAPS OF GEOGRAPHIC AND DOMESTIC FEATURES AND VERTICAL CROSS-SECTION MAPS OF THE OVERBURDEN, MINERAL SEAMS, ETC., THE RECLAMATION PLAN FOR A PERMIT SHOULD INCLUDE IN A MANNER SATISFACTORY TO THE REGULATORY AUTHORITY A CHARACTERIZATION OF THE VEGETATION AND THE RELATED ENVIRONMENT OF THE AFFECTED AREA BY THE FOLLOWING:

(1) A MAP OF THE EXISTING VEGETATION OVERLAIN ON A TOPOGRAPHIC MAP OF SUFFICIENT SCALE TO PROVIDE ADEQUATE DELINEATION OF COMMUNITY TYPES.

(2) A GRADIENT ANALYSIS OF PLANT COMMUNITIES IN RELATION TO GRADIENTS OF ELEVATION, DEGREE OF SLOPE, DIRECTION OF SLOPE, SOIL STRUCTURE, SOIL DEPTH, SOIL MOISTURE, RADIANT ENERGY AND BIOTIC INFLUENCE.

(3) A THREE-DIMENSIONAL SPATIAL DISPLAY OF THE STRUCTURE OF THE PLANT COMMUNITIES.

(4) AN ANALYSIS OF THE DYNAMICS OF PLANT SUCCESSION, PATTERNS OF RESPONSE TO CLIMATIC FLUCTUATIONS, AND PATTERNS OF RECOVERY FROM VARIOUS TYPES AND LEVELS OF DISTURBANCE.

(5) LIFE HISTORY ATTRIBUTES OF THE DOMINANT AND MAJOR SUBDOMINANT SPECIES, INCLUDING REPRODUCTIVE METHODS AND CAPACITIES, ROOT AND SHOOT MORPHOLOGY, GROWTH RATES, SHADE TOLERANCE, AND LIFE SPAN.

ONLY WITH A FULL UNDERSTANDING OF THE NATURE AND DYNAMICS OF THE VEGETATION OF THE AREA CAN ADEQUATE RECLAMATION BE ANTICIPATED. THE MINING OPERATION ITSELF WOULD CERTAINLY NOT SUCCEED WITHOUT A DETAILED UNDERSTANDING OF ITS OWN SPECIAL PARAMETERS.

THE TECHNIQUES FOR THE ESTABLISHMENT OF ANY REGENERATING VEGETATION ARE GREATLY COMPLICATED BY THE INTRODUCTION OF SPENT SHALE INTO THE PICTURE. EXPERIMENTALLY PLANTS HAVE BEEN GROWN ON SMALL PROTECTED PLOTS OF SPENT SHALE, BUT ONLY WITH RATHER ELABORATE ARTIFICIAL TREATMENTS OF SALT LEACHING, FERTILIZATION AND IRRIGATION. WHAT WILL BE THE SUCCESS OF REVEGETATION OVER AN INDEFINITE PERIOD OF TIME, WHEN THE CULTURAL PRACTICES ARE NO LONGER APPLIED? DEMONSTRATION OF SUCCESS IN MORE RIGOROUS ENVIRONMENTS WITHOUT ARTIFICIAL PRACTICES SHOULD BE REQUIRED

BEFORE A PERMIT IS ISSUED.

A DIFFICULT QUESTION IS HOW DOES AN AUTHORITY MEASURE SUCCESS OR THE LACK OF IT IN REVEGETATION EFFORTS? STANDARDS OF QUANTITATION ARE FAIRLY EASILY ESTABLISHED FOR AIR AND WATER POLLUTION, BUT TO MY KNOWLEDGE HAVE NEVER BEEN EMPLOYED FOR REVEGETATION. THE EVALUATION IS NECESSARILY HIGHLY SUBJECTIVE, THUS WHO DOES THE JOB IS VITALLY IMPORTANT.

THE KEY TO THE SUCCESS OF REVEGETATION EFFORTS LIES WITH THE UNDERSTANDING AND ENFORCEMENT CAPABILITY OF STATE OR FEDERAL PERSONNEL. STANDARDS WILL IN EFFECT BE SET BY THEM - AND NOT BY LAWS. A REQUIREMENT OF ADEQUATE INTERDISCIPLINARY EXPERTISE IN THE STATE AND FEDERAL REGULATORY AUTHORITIES WILL NOT ASSURE SUCCESS BUT FAILURE IS ALMOST CERTAIN WITHOUT THE REQUIREMENT.

PERFORMANCE BONDS, MENTIONED IN SEC. 208 AND 210 OF S. 425 SHOULD BE ASSESSED AND RELEASED WITH A CONSIDERATION OF SUCCESS OVER TIME.

THE MAIN PORTION OF S. 425, TITLE II PRESUMES THAT THE TECHNOLOGY OF RECLAMATION HAS BEEN WORKED OUT, BUT SOME RECOGNITION OF THE FACT THAT IT IS NOT IS FOUND IN TITLE IV SEC. 404, WHERE RESEARCH AND DEMONSTRATION PROJECTS MAY BE CARRIED OUT AND SUPPORTED BY THE SECRETARY OF THE INTERIOR, WITH AN ANNUAL BUDGET OF $5,000,000. THIS IS A MOST

IMPORTANT PART OF THE BILL, AND UNLESS IT IS MAINTAINED IN THE BILL THERE IS LITTLE LIKELIHOOD THAT THE NECESSARY FACTS AND "KNOW-HOW" WILL BE ACQUIRED FOR THE OIL SHALE PROBLEMS. THIS APPROACH HAS A PRECEDENT IN AGRICULTURE WHICH SHOULD BE RECALLED. THROUGHOUT THE AGRICULTURAL AREA THERE HAVE BEEN REGIONAL BRANCH STATIONS TO DO RESEARCH UNDER THE PARTICULAR ENVIRONMENTAL CONDITIONS OF THAT AREA AND TO PROVIDE VISIBLE EVIDENCE IN STRAIN GARDENS OF COMPARATIVE SUCCESS TO THE FARM INDUSTRY.

A COMPARABLE REGIONALITY IS APPROPRIATE FOR MINING - FOR EXAMPLE, THE PROBLEMS OF RECLAMATION OF COAL STRIP MINING IN MONTANA ARE QUITE SIMILAR TO THOSE IN N. E. WYOMING AND THE DAKOTAS. AND THOSE PROBLEMS ARE DIFFERENT FROM THE REASONABLY COMMON SET OF PROBLEMS FOR OIL SHALE IN THE GREEN RIVER FORMATION OF COLORADO, WYOMING AND UTAH.

FOR REASONS OF UNIFORMITY AND EQUITY OF RECLAMATION STANDARDS SOME DEGREE OF REGIONAL OVERLAY OUGHT TO BE CONSIDERED IN THE STATE - FEDERAL ADMINISTRATION OF MINING RECLAMATION. I SUSPECT THAT THE MINING COMPANIES WOULD FAVOR THIS. THEIR COMPETITIVE POSITION IS THEN LESS THREATENED BY DIVERSE STANDARDS.

I WOULD ALSO LIKE TO SPEAK IN SUPPORT OF TITLE III OF S. 425 AND SEC. 215 WHICH DEAL WITH ABANDONED AND UNRECLAIMED MINED AREAS AND DESIGNATION OF LAND AREAS UNSUITABLE FOR MINING, RESPECTIVELY. COLORADO HAS SOME EXTENSIVE AREAS OF ABANDONED MINE WASTES FOR WHICH THERE IS NO CHANCE TO ESTABLISH AN OBLIGATION ON THE PART OF THE GUILTY PARTY. THOSE LANDSCAPES SERVE ONLY AS EYESORES. THE LEGAL POSSIBILITY OF ASSESSING OTHER VALUES AGAINST THOSE OF MINING IS A MOST DESIRABLE FEATURE OF SEC. 215. THE SAN JUAN MOUNTAINS IN COLORADO, SOME OF THE MOST BEAUTIFUL IN THE WORLD, NEED TO HAVE THIS ASSET WEIGHED AGAINST INCREASING MINING INTERESTS.

THERE ARE THREE SMALL PARTS OF S. 425 WHICH ARE NOT PERTINENT TO THE ESSENTIAL PURPOSE OF THE BILL AND SHOULD BE ELIMINATED. THEY ARE PARTS 7, 8, AND 9 OF SEC. 202(c), DEALING WITH INVENTORIES AND DATA CENTERS FOR LAND USE PATTERNS. THE IDEAS ARE EXCELLENT, BUT OUT OF PLACE - BOTH IN THE BILL AND IN THE DEPARTMENT OF INTERIOR.

IN SUMMARY MY PRIMARY RECOMMENDATIONS ARE AS FOLLOWS:

1. ADEQUATE INTERDISCIPLINARY EXPERTISE SHOULD BE REQUIRED IN THE STATE AND FEDERAL REGULATORY AUTHORITIES, AND MORE USE OF THE

EXPERTISE IN THE SCS, ARS AND FOREST SERVICE SHOULD BE PROGRAMMED.

2. THE ENFORCEMENT FUNCTION OF RECLAMATION OF SURFACE MINED AREAS SHOULD REST WITH THE ENVIRONMENTAL PROTECTION AGENCY.

3. TO BE ELIGIBLE FOR A PERMIT THE APPLICANT SHOULD DEMONSTRATE A THOROUGH UNDERSTANDING OF THE VEGETATION OF THE AREA, ITS RELATIONSHIP TO ENVIRONMENT AND USE GRADIENTS, ITS SUCCESSIONAL AND RECOVERY CHARACTERISTICS, AND THE LIFE HISTORY ATTRIBUTES PERTINENT TO REESTABLISHMENT.

4. THE APPLICANT SHOULD ALSO BE REQUIRED TO DEMONSTRATE REVEGETATION SUCCESS IN ENVIRONMENTS REFLECTING THE RANGE OF NATURAL ENVIRONMENTS TO BE EXPECTED AND WITHOUT INDEFINITE CONTINUATION OF ARTIFICIAL CULTURAL PRACTICES.

5. PERFORMANCE BONDS SHOULD BE ASSESSED AND RELEASED BASED UPON A CONSIDERATION OF SUCCESS OF RECLAMATION OVER TIME.

6. PATTERNED AFTER THE SUCCESS IN AGRICULTURE, RESEARCH AND DEMONSTRATION PLOTS FOR THE SPECIAL PROBLEMS OF RECLAMATION SHOULD BE ESTABLISHED ON A REGIONAL BASIS.

Senator METCALF. Did you hear Dr. Curry?

Mr. WARD. I heard part of his testimony, what I heard was very favorable.

Senator METCALF. He indicated perhaps that it is not only a regional problem as I understood it, but a far western problem of revegetation and reclamation and restoration that could be geologically completely different than anything in the East, and perhaps very difficult to attain.

Mr. WARD. There is no question about it, I probably would argue that kind of a division, the East versus the West and there are some very great problems and difference between the two areas, but I would probably argue that the landscape of North Dakota, South Dakota, and eastern Montana is a different ball game than is the sculptured shale area of northwest Colorado. So, you may get the different levels.

Senator METCALF. And perhaps extending the regionality further, another very live area, the Four Corners area, down in Arizona, and New Mexico, and Colorado, and Utah.

Thank you very much for coming and helping us in these considerations of what we are going to do on reclamation and restoration of our land, the energy crisis, and all the various problems with which we are confronted.

Mr. WARD. Thank you.

Senator METCALF. We still have Dr. Weaver, from Colorado State University. We are pleased to have you here.

Dr. WEAVER. Thank you, Mr. Chairman.

STATEMENT OF GLEN D. WEAVER, COLORADO STATE UNIVERSITY

Dr. WEAVER. I am Glen D. Weaver, assistant professor of geography, department of economics, Colorado State University.

My statement concerns the efficacy of the proposed legislation relative to mining and processing of oil shale. Although oil shale operations now exist only on a small experimental scale, success of the Department of the Interior's proposed leasing program could stimulate development of a commercial industry that would unavoidably produce large-scale land disturbances and generate attendant potential for air and water pollution, decimation of wildlife, and destruction of wilderness.

The actual impacts of commercial development are incompletely known at present, but the potential problems can be foreseen clearly enough to support explicit recommendations on the mined-land legislation being considered by this committee. I offer such recommendations here as a complement to the statement of my CSU colleague, Dr. Ward.

A written statement detailing my views has been supplied to the committee, and I ask that it become part of the hearing record. The written statement contains 12 recommendations and supporting comments. In the time allotted for oral testimony, I would like to summarize the 12 recommendations by subsuming them under 4 general questions. These are:

One, who should administer the Mined-Land Act?

Two, what evaluation techniques should be used in setting regulations to meet performance standards of the act?

Three, what activities should be exempted or given special privilege under the act?

Four, what measures are needed to minimize or prevent irreversible damage to the environment?

Responding to the first question, who who should administer the act, I support S. 425 in establishing an Office of Land Use Policy, Reclamation, and Enforcement, but recommend that the Office be housed in the Environmental Protection Agency rather than the Department of Interior.

Interior already has the conflicting mission of being both "promoter" and "protector" of the Nation's mineral lands. Interior's initial handling of the current oil shale leasing program provides but one example of the understandable propensity to subordinate one mission to the other.

The original National Environmental Policy Act draft statement released by Interior in 1971 was 99-percent promotion and 1-percent protection of the oil shale lands. The revised draft statement issued in September 1972, adopted a more balanced approach, but nonetheless avoided penetrating analyses of the most crucial environmental hazards.

I am also reminded of Interior's attempted oil shale leasing program in 1968, when the Federal Water Pollution Control Administration, an Interior agency at the time, had no visible input to the program although FWPCA personnel were aware of oil shale water quality problems.

While applauding the many competent and conscientious people who do work in Interior, I remind the committee that the Environmental Protection Agency was specifically organized to avoid the conflicting duality of mission with which many Interior people must compromise. EPA's very name echos the intent of the proposed legislation, and its environmental esprit de corps would provide a healthy check and balance to legitimate promotion of mineral development.

Responding to the second question, what evaluation techniques should be used in setting regulations to meet performance standards of the Mined-Land Act? I make a special plea for the analytical methods of the resource economist. The economist must obviously work in close concert with the reclamation engineer, the hydrologist, the revegetation expert, and other skilled personnel; but I am keenly aware that most studies of mined-land reclamation have proceeded in virtual ignorance of the market-valued costs of environmental damages which the mining and reclamation plan is designed to prevent.

Interior's NEPA draft statement for the prototype oil shale program contains absolutely no economic assessment of the potential or probable environmental damages of mineral development. To be sure, Interior does compute the employee payroll, Federal and State taxes, and plant equipment expenditures expected to flow from the program.

Thus we are informed of the gross monetary benefits of oil shale development, but are protected from knowing the monetary disbenefits which may simultaneously flow from the program.

In complete sympathy with my environmentalist friends, I support the contention that nonmarket values, or so-called intangible values, should be identified and carefully evaluated by the regulating agency.

Without fear of being excommunicated from the environmentalist fraternity, or being damned by John Q and Susy Q Consumer, I also recommend that environmental values be given a market price tag whenever this can be reasonably accomplished.

Putting a price tag on environmental diseconomies will obviously help us prevent underspending or overspending on environmental protection. I therefore recommend that personnel recruited for the Office of Land Use Policy, Reclamation, and Enforcement include resource economists skilled in the market valuation of environmental diseconomies.

Turning to the third question, What activities should be exempted or given special privilege under the Mined-Land Act?, I note that one or both of the bills before the committee exclude smelting and refining operations, exempt underground mining activities unless they are incident to the surface, and grant special consideration to experimental operations and to the recovery of minerals having no practicable alternative domestic source.

My written statement points out that smelter operations often produce large volumes of solid tailings, with attendant potential for environmental damage. Are land disturbances caused by disposal of smelter wastes to be exempted from the Mined-Land Act?

I also wonder if a legal case could be made for placing oil shale retorting under the rubric of "smelting." If this were done, and the oil shale plant used underground mine recovery and partial backfill, then the major potentials for environmental damage could escape regulation.

Underground mining should itself be regulated, at least to the extent that it creates the hazard of land-surface subsidence and may have deleterious impacts on both water yield and water quality.

A minimum-sized oil shale plant, for example, could remove support from beneath 3,000 to 4,500 acres over a 20-year life. Subsidence hazard would be created, and the hydrogeology of the site could be significantly altered.

Experimental mining operations should be given special consideration, but mostly in terms of closer scrutiny of the mining and reclamation plan. Such operations necessarily involve greater uncertainty than established technologies.

I am also concerned over experimental technologies that have very limited chance of gaining environmental acceptability if employed on full commercial scale. Nuclear stimulation of natural gas is a well known example. In situ retorting of oil shale may become another.

Section 212 of S. 425 provides that the Secretary of the Interior may establish alternative regulations for the mining of minerals having "no practicable alternative domestic source." This provision should be dropped, except where it applies under the temporary suspension authority granted to the President of the United States in Section 407.

Because of the current national concern over domestic petroleum supplies, oil shale interests, including some officials in the Department of the Interior, might well seek special privileges under the rubric of "no practicable alternative domestic source." If oil shale should be found deserving of special treatment, I would prefer that the decision be reached under the more searching provision of section 407.

The fourth and final question, What measures are needed to minimize or prevent irreversible damage to the environment, is a very perplexing one.

Mining and solid waste disposal activities of a mature oil shale industry would necessarily involve massive reconstitution of the landscape. Storage of spent shale on flat land would create new gently sloping hills or benched mesalike forms of 100 to 200 feet or more relief.

Storage in canyons would convert steepwalled valleys into sloping plains bordered by residual ridge crests. Engineering structures built to protect storage fills would become permanent landscape features and would need periodic maintenance to accomplish their design function. Partially filled open pits would create new depressions and artificial lakes. The lake waters would likely exhibit poor mineral quality because of high evaporation rates or influx of saline groundwaters.

These are irreversible changes. Reclamation efforts could structure the new features to blend with the surrounding terrain, but no amount of reclamation could return the landscape form to its original likeness.

Here the basic issue is how much irreversible change we are willing to tolerate. Notice here that I use the word "change" rather than "damage." In this case I simply don't know when change becomes damage.

In my written statement I focus entirely on the threat of hydrologic damage, in terms of both water yield and water quality.

Neither Senate bill gives full consideration to the adverse impacts on water yield which may accompany mineral developments. This is a serious oversight in view of the increasing magitude of mining operations envisioned for the future and the increasing scale of mining already occurring in the water-short arid to semiarid Western States.

Mining activities invariably affect the water budget through, one, withdrawal and consumptive use of water for mineral processing, or two, land disturbances that alter the hydrologic parameters controlling surface runoff and groundwater yield.

All three oil shale recovery systems, underground mining, surface mining, and in-situ retorting, would alter the hydrogeology of development sites. My written statement outlines several cases to show that the impacts could be irreversibly deleterious, and could be felt as far downstream as Arizona, southern California, and Mexico.

I also outline the hazards of irreversible degradation of water quality which may accompany oil shale development.

To minimize or prevent damage to hydrologic systems, I recommend that all permit applications contain detailed information on the hydrogeology and water budget of the proposed development site, together with detailed assessment of the potential and probable impacts on both onsite and related offsite areas.

A straightforward recommendation until someone asks: How much detail? How much detail is needed to prevent damage to hydrologic systems, to vegetation systems, to wildlife systems, how much detail should the regulating agency have on hand before establishing explicit performance standards?

The search for information involves costs, and the obvious restraint on "what and how much detail" will be the operating budget given to

the regulating agency and the willingness of private operators to incur costs in preparing the permit application.

Since both costs, private and public, will be borne directly or indirectly by the American consumer, the tradeoff between information needs and costs of acquiring information should be optimized. This can be done in part by assuring that the regulating agency is staffed by a mix of competent people suited to the job of analyzing interdisciplinary problems.

Minimizing environmental damage by an oil shale industry will require that the industry be regulated as a single unit, rather than as a series of discrete independent operations. Thus I support S. 425 in calling for a joint Federal-State program on interspersed Federal lands.

I strongly recommend that the permittee be held financially responsible for the long-term maintenance and repair of reclamation measures essential to the homeostasis, or stability, of the reclaimed development site.

Reclaimed lands may or may not have high degrees of homeostasis. For example, any permanent water diversion or impoundment structures built to protect spent shale dumps would become ineffective over time as they become filled with sediments. Untreated spent shales exposed by accelerated erosion would constitute very sterile soil material.

Natural revegetation of these truncated surfaces would take a very long time, and would culminate in a ground cover much inferior to that established during the reclamation process.

S. 425 provides that no performance bond shall be fully released until all reclamation requirements of the act are fully met. Precisely when are all reclamation requirements fully met? As soon as the water management structures are in place and inspected by the regulating agency? As soon as the spent shale dump shows a first season growth of newly established plants?

I believe that a specific time frame should elapse before the permittee is released from his obligation. Whether the time frame should be 5 years, 10 years, or longer, I am not prepared to say; but it should definitely be long enough to give a reasonable test of the homeostasis of the reclaimed area, consistent with existing legal and economic concepts of long-term liability.

In conclusion, I urge the committee to pass a modified version of S. 425. I especially praise its recognition of the need for an Office of Land Use Policy, Reclamation, and Enforcement; for Federal inspections, Federal enforcement if the State fails to act, designation of lands unsuitable for mining, joint Federal-State program for interspersed Federal lands, reclamation of abandoned mined areas, and funding of research and demonstration projects.

At the same time I encourage the committee to incorporate the recommendations given here and those offered by Dr. Ward, so that the final Mined Land Act will give even brighter promise for environmental protection of the Nation's land resources.

Thank you.

Senator METCALF. Thank you very much.

I want to thank both of you, Dr. Weaver and Dr. Ward for calling our attention to the oil shale area. We have had people here from coal and hard rock mining and sand and gravel quarries but the special problems of the oil shale district haven't been touched on.

I appreciate the very comprehensive and thorough statement. Your other statement will be in the record immediately following.

We are glad to have you here; thank you for coming. Thank you for helping us in consideration of this very great problem.

Dr. WEAVER. Thank you.

[The complete statement of Dr. Weaver follows:]

ORAL STATEMENT BEFORE THE SENATE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS, HEARINGS ON MINED-LAND LEGISLATION,
March 15, 1973

Mr. Chairman, Members of the Committee: I am Glen D. Weaver, Assistant Professor of Geography, Department of Economics, Colorado State University.

My statement concerns the efficacy of the proposed legislation relative to mining and processing of oil shale. Although oil shale operations now exist only on a small experimental scale, success of the Department of the Interior's proposed leasing program could stimulate development of a commercial industry that would unavoidably produce large-scale land disturbances and generate attendant potential for air and water pollution, decimation of wildlife, and destruction of wilderness.

The actual impacts of commercial development are incompletely known at present, but the potential problems can be foreseen clearly enough to support explicit recommendations on the mined-land legislation being considered by this Committee. I offer such recommendations here as a complement to the statement of my CSU colleague, Dr. Ward.

A written statement detailing my views has been supplied to the Committee, and I ask that it become part of the hearing record. The written statement contains twelve recommendations and supporting comments. In the time allotted for oral testimony, I would like to summarize the twelve recommendations by subsuming them under four general questions. These are:

1) Who should administer the Mined-Land Act?

2) What evaluation techniques should be used in setting regulations to meet performance standards of the Act?

3) What activities should be exempted or given special privilege under the Act?

4) What measures are needed to minimize or prevent irreversible damage to the environment?

Responding to the first question, Who should administer the Act?, I support S.425 in establishing an Office of Land Use Policy, Reclamation, and Enforcement, but recommend that the Office be housed in the Environmental Protection Agency rather than Department of the Interior.

Interior already has the conflicting mission of being both "promoter" and "protector" of the Nation's mineral lands. Its initial handling of the current oil shale leasing program provides but one example of the understandable propensity to subordinate one mission to the other.

The original NEPA draft statement released by Interior in 1971 was 99 percent promotion and 1 percent protection of the oil shale lands. The revised draft statement issued in September 1972 adopted a more balanced approach, but nonetheless avoided penetrating analyses of the most crucial environmental hazards.

I am also reminded of Interior's attempted leasing program in 1968, when the Federal Water Pollution Control Administration, an Interior agency at the time, had no visible input to the program although FWPCA personnel were aware of oil shale water quality problems.

While applauding the many competent and conscientious people who do work in Interior, I remind the Committee that the Environmental Protection Agency was specifically organized to avoid the conflicting duality of mission with which many Interior people must compromise. EPA's very name echoes the intent of the proposed legislation, and its environmental esprit de corps would provide a healthy check-and-balance to legitimate promotion of mineral development.

Responding to the second question, What evaluation techniques should be used in setting regulations to meet performance standards of the Mined-Land Act?, I make a special plea for the analytical methods of the resource economist. The economist must obviously work in close concert with the reclamation engineer, the hydrologist, the revegetation expert, and other skilled personnel; but I am keenly aware that most studies of mined-land reclamation have proceeded in virtual ignorance of the market-valued costs of environmental damages which the mining and reclamation plan is designed to prevent.

Interior's NEPA draft statement for the prototype oil shale program contains absolutely no economic assessment of the potential or probable environmental damages of mineral development. To be sure, Interior does compute the employee payroll, federal and state taxes, and plant equipment expenditures expected to flow from the program. Thus we are informed of the gross monetary benefits of oil shale development, but are protected from knowing the monetary disbenefits which may simultaneously flow from the program.

In complete sympathy with my environmentalist friends, I support the contention that nonmarket values, or so-called intangible values, should be identified and carefully evaluated by the regulating agency. Without fear of being excommunicated from the environmentalist fraternity, or being damned by John Q and Susy Q Consumer, I also recommend that environmental values be given a market price tag whenever this can be reasonably accomplished.

Putting a price tag on environmental diseconomies will obviously help us prevent underspending or overspending on environmental protection. I therefore recommend that personnel recruited for the Office of Land Use Policy, Reclamation, and Enforcement include resource economists skilled in the market valuation of environmental diseconomies.

Turning to the third question, What activities should be exempted or given special privilege under the Mined-Land Act?, I note that one or both of the bills before the Committee exclude smelting and refining operations, exempt underground mining activities unless they are incident to the surface, and grant special consideration to experimental operations and to the recovery of minerals having no practicable alternative domestic source.

My written statement points out that smelter operations often produce large volumes of solid tailings, with attendant potential for environmental damage. Are land disturbances caused by disposal of smelter wastes to be exempted from the Mined-Land Act? I also wonder if a legal case could be made for placing oil shale retorting under the rubric of "smelting." If this were done, and the oil shale plant used underground mine recovery and partial backfill, then the major

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be felt as far downstream as Arizona, southern California, and Mexico.

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In conclusion, I urge the Committee to pass a modified version of S.425. I especially praise its recognition of the need for an Office of Land Use Policy, Reclamation, and Enforcement; for Federal inspections, Federal enforcement if the State fails to act, designation of lands unsuitable for mining, joint Federal-State Program for interspersed Federal lands, reclamation of abandoned mined areas, and funding of research and demonstration projects.

At the same time I encourage the Committee to incorporate the recommendations given here and those offered by Dr. Ward, so that the final Mined-Land Act will give even brighter promise for environmental protection of the Nation's land resources.

Thank you.

RECOMMENDATIONS FOR A MINED-LAND PROTECTION ACT, WITH SPECIAL REFERENCE TO THE DEVELOPMENT OF OIL SHALE

Mr. Chairman, Members of the Committee: I am Glen D. Weaver, Assistant Professor of Geography, Department of Economics, Colorado State University.

I support the premise that Congress should enact mined-land legislation regulating commercial mineral operations and experimental activities having significant potential for environmental damage.

My statement concerns the efficacy of the proposed legislation relative to the mining and processing of oil shale. Although oil shale operations now exist only on a small experimental scale, the Department of the Interior has announced a Federal leasing program designed to greatly expand experimental activities (U.S. Dept. Interior, 1971, 1972). Success of the program could stimulate development of a commercial industry that would unavoidably produce large-scale land disturbances and generate attendant potential for air and water pollution, decimation of wildlife, and destruction of wilderness (Weaver, 1972a).

The actual impacts of commercial development are incompletely known at present, but the potential problems can be foreseen clearly enough to support explicit recommendations on the mined-land legislation being considered by this Committee. I offer such recommendations here as a complement to the statement of my CSU colleague, Dr. Richard T. Ward. My own comments reflect knowledge gained by conducting research on oil shale over much of the past four years.

RECOMMENDATION 1: AN OFFICE OF LAND USE POLICY, RECLAMATION, AND ENFORCEMENT SHOULD BE ESTABLISHED TO ADMINISTER THE MINED-LAND ACT, BUT THE OFFICE SHOULD BE HOUSED IN THE ENVIRONMENTAL PROTECTION AGENCY RATHER THAN IN THE DEPARTMENT OF THE INTERIOR.

Both Senate bills provide that Federal administrative functions shall be housed in the Department of the Interior. This arrangement invites conflict of interest in carrying out the intent of the proposed legislation, since the Department of the Interior has the un-

enviable mission of being both "promoter" and "protector" of the Nation's mineral lands.

The promoter-protector dichotomy is exemplified by Interior's handling of the prototype oil shale leasing program.

The original NEPA draft environmental statement prepared by Interior (U.S. Dept. Interior, 1971) was a sham. It reached optimistic conclusions regarding environmental impacts without first identifying the numerical magnitude of controlled or uncontrolled waste effluents, and without first examining the waste assimilative capacity of the receiving environmental media. Relationships to the Lower Colorado River Basin were ignored, and long-range impacts of a mature industry were left to the reader's imagination. Protection of the environment was blatantly subordinate to promotion of mineral development.

The revised draft NEPA statement (U.S. Dept. Interior, 1972) adopted a more balanced approach, but nonetheless contained a number of unnecessary ambiguities and deceptive, if not completely erroneous conclusions (Weaver, 1972b).

My criticisms here are not intended to paint the Interior Task Force as a group of bad guys. I fully appreciate their dilemma and understandable propensity to compromise either the protector or promoter mission of the Department.

Section 202 of S.425 appears to recognize the conflict of interest inherent within the Department of the Interior. In establishing within Interior a newly created Office of Land Use Policy, Reclamation, and Enforcement, the section specifies that employees of the Office shall be recruited on the basis of their professional competence and capacity to "objectively" administer the provisions of the Act, and that no existing legal authority in the Department which promotes the development of coal or other mineral resources shall be transferred to the Office.

While a separate Office within the Interior Department may escape enough pressure of mineral development to engender a healthy environmental esprit de corps, I believe that provisions of the Mined-Land Act would be best served by placing the newly created Office of

Land Use Policy, Reclamation, and Enforcement within the Environmental Protection Agency.

RECOMMENDATION 2: REGULATIONS ADOPTED TO MEET PERFORMANCE STANDARDS OF THE MINED-LAND ACT SHOULD BE SET IN ACCORDANCE WITH A COST-BENEFIT ANALYSIS THAT CONSIDERS BOTH MARKET AND NONMARKET VALUES. SPECIAL EFFORT SHOULD BE MADE TO IDENTIFY THE MARKET-VALUED COSTS OF ENVIRONMENTAL DAMAGES, AS WELL AS THE PRIVATE COSTS OF AVOIDING THE DAMAGES.

Section 201 of S.923 provides that regulations developed by the State agency and Secretary of the Interior to meet performance standards of the Act shall consider, "in addition to the relative degrees of environmental protection, the relative cost involved."

I interpret this provision to mean that marginal economic analysis should be applied to (1) the anticipated social costs of environmental degradation and (2) the private costs of preventing the degradation. If my interpretation is correct, I would broaden the provision to require consideration of all relevant market and nonmarket values. However, special effort should be made to state environmental damages in market-valued terms, so that ready comparison can be made with the private costs of preventing the damages or with economic benefits expected to flow from mineral development.

For example, Interior's NEPA draft statement for the prototype oil shale program (U.S. Dept. Interior, 1972) computes the gross national and regional economic benefits of mineral development, but fails to assess the market-valued costs of environmental damage. Decisionmaking is therefore unnecessarily biased in favor of mineral development.

Table 1 gives an example of how environmental damages can be translated into market-valued terms. The cost data refer to incremental penalty costs to the United States regional economy below Hoover Dam associated with the potential salt concentrating and salt loading effects of a mature oil shale industry. Under the conditions assumed, costs are those which would accrue to water users and related economic units in the Lower Colorado River Basin and southern California water service area. The external costs cited in Table 1 are based on preliminary work, and may thus be adjusted upward or downward as more information is developed.

TABLE 1

PENALTY COSTS ASSOCIATED WITH THE POTENTIAL SALINITY EFFECTS OF A 1,000,000 BARRELS PER DAY INDUSTRY

Salinity Factor	Salinity Effect at Hoover Dam (mg/l)	Costs to Downstream Areas[a]	
		Total Annual	Per Bbl Shale Oil Capacity
Consumptive Use of Water:			
100,000 afy	4.1	$328,000	0.09¢
124,400 afy (1985)	6 to 10	$480,000 to $800,000	1.3¢ to 2.2¢
Leaching of Spent Shale:[b]			
1% removal	3.5	$280,000	0.08¢
5% removal	17.5	$1,400,000	3.8¢
Urban Return Flow	0.5	$40,000	0.01¢
Other Factors		not determined	

[a] Incremental salinity detriments to United States regional economy below Hoover Dam, assuming water depletions and salt loads are supplemental to those already projected for 1980 (or 1985). Assumes $80,000 incremental costs per unit increase in salinity concentration at Hoover Dam above projected 1980 level of 876 mg/l.

[b] Salt load of shale leachate based on estimated total extractable salt content in annual spent shale output of 4.18 million tons (U.S. FWPCA, 1968, p. A10).

Data abstracted from Weaver (1972a, table 6.12)

RECOMMENDATION 3: PERSONNEL RECRUITED FOR THE OFFICE OF LAND USE POLICY, RECLAMATION, AND ENFORCEMENT SHOULD INCLUDE RESOURCE ECONOMISTS SKILLED IN THE EVALUATION OF ENVIRONMENTAL DISECONOMIES.

This recommendation flows from the preceding comments, and should be explicitly noted in the language of Section 202 (b) of S.425.

RECOMMENDATION 4: RESEARCH FUNDS SHOULD BE PROVIDED TO ADVANCE THE EXPERTISE NEEDED FOR ECONOMIC EVALUATION OF MINED-LAND CONSERVATION.

Brooks noted in 1966 that exceedingly little economic analysis had been done in the field of mined-land conservation. The situation

has not improved greatly in the intervening years despite considerable overall advances in the study of environmental diseconomies.

Hence it is recommended that research funds be provided to advance the expertise necessary for economic evaluation of mined-land conservation. Such funds could be specified under the provisions of Section 404 (a) of S.425.

RECOMMENDATION 5: A JOINT FEDERAL-STATE PROGRAM FOR ADMINISTERING MINING PERMITS AND RECLAMATION PLANS SHOULD BE IMPLEMENTED BEFORE ALLOWING ANY COMMERCIAL-SCALE OIL SHALE OPERATIONS.

Section 216 (c) of S.425 provides that the Secretary may enter into agreements with States to provide for a joint Federal-State Program covering permits for surface mining and reclamation operations on lands which are interspersed or checkerboarded and which should, for conservation and administrative purposes, be regulated as a single management unit.

The provision of a joint Federal-State Program is an excellent one, and should definitely be implemented as a prerequisite to any commercial oil shale development. The magnitude of commercial oil shale operations, the interspersed and multiple ownership status of oil shale lands, and the water pollution reinforcing effects of separate developments due to common location in the Upper Colorado River Basin, require that separate components of the industry be regulated collectively rather than as isolated individual units.

RECOMMENDATION 6: HAZARDS OF LAND SUBSIDENCE AND CHANGE IN THE WATER BALANCE ASSOCIATED WITH UNDERGROUND MINING SHOULD BE REGULATED BY THE MINED-LAND ACT.

S.425 does not appear to regulate underground mining as it may directly contribute to land subsidence or alteration of water yield and water quality.

A minimum sized oil shale plant using underground mining could remove support from beneath 3,000 to 4,500 acres over a 20-year life (table 2). This would necessarily create the hazard of land-surface subsidence, as subsidence potential exists to some degree in all areas of underground mining (Cochran, 1971).

TABLE 2

COMPARATIVE LAND REQUIREMENTS OF A 50,000 BARRELS PER DAY OIL SHALE PLANT

Recovery System	Land Requirements in Acres[a]			
	Mineral Extraction	Solid Waste Disposal	Plant and Offsite Facilities	Total Over 20-Year Life
Open pit mining and surface retorting[b]	200-250 per yr	500-550 total (temporary or permanent offsite disposal); 56-80 per yr (permanent disposal)	200-300	4,700-7,000+
Underground mining and surface retorting[b,c]	10 total (surface); 150-226 per yr (subsurface)	56-80 per yr (no return of wastes to mine); 96 total, 1st 3 yrs, then 22-32 per yr (60% return of wastes to mine)	200-300	750-1,900 (surface); 3,000-4,500 (subsurface)
In-situ retorting and well recovery[d]	146-255 per yr	Soil removed from graded well sites could be stored on mineral land	200-300	3,120-5,400

[a] Assumes use of 25 gallons per ton oil shale.

[b] Surface acreage requirements (U.S. Dept. Interior, 1971, table III-1, p. III-6).

[c] Subsurface acreage requirements computed by assuming 50 to 75 percent mine recovery of inplace oil shale from deposit 100 feet thick, and 90 percent efficiency of retorting the mined rock.

[d] Acreage requirements for mineral extraction computed by assuming 40 to 70 percent recovery from oil shale deposit 100 feet thick.

Data abstracted from Weaver (1972a, table 1 of Summary Report).

Underground mining of oil shale may also directly contribute to water pollution or alteration of water yield, as explained later.

RECOMMENDATION 7: LAND DISTURBANCES ASSOCIATED WITH THE SOLID WASTE OUTPUT OF SMELTER AND REFINING OPERATIONS SHOULD BE REGULATED BY THE MINED-LAND ACT.

S.923 specifically excludes smelting from its provisions; while S.425 excludes both smelting and refining.

These blanket exclusions are inappropriate considering the large volumes of solid tailings and the resulting environmental damages associated with many smelter and some refining operations.

I also wonder if a legal case could be made for including oil shale retorting under the rubric of "smelting," thus removing spent shale disposal from provisions of the proposed legislation.

RECOMMENDATION 8: PERMIT APPLICATIONS FOR EXPERIMENTAL MINING OPERATIONS SHOULD BE AS THOROUGHLY EVALUATED AS PERMITS FOR COMMERCIAL OPERATIONS.

Section 201 (a) (5) of S.923 provides that experimental mining and reclamation operations may be exempted from certain requirements of the Act.

While experimental operations are clearly needed to advance mineral technology, the granting of permits for experimental work should be preceded by full conceptualization of the environmental hazards of the proposed experimentation, including the environmental hazards of using the proposed technology on a full commercial scale.

Interior's NEPA draft statement for oil shale (U.S. Dept. Interior, 1972) is consistently reluctant to provide substantive data on the environmental hazards of in-situ recovery systems. I believe that the technological aspects of in-situ processing are already sufficiently known to permit substantive conceptualization of environmental impacts (Weaver, 1972a), and that if such were really done by Interior the conclusion would be reached that in-situ retorting of oil shale, even using conventional fracturing techniques, has the same degree of future environmental acceptability as nuclear stimulation of natural gas reservoirs. I believe both technologies have dim futures if evaluated on the basis of full-scale commercial use.

My general point here is that close scrutiny should be given to proposed experimental operations to help prevent unnecessary environmental damage.

RECOMMENDATION 9: CRITERIA FOR MINING AND RECLAMATION OPERATIONS FOR MINERALS HAVING NO PRACTICABLE ALTERNATIVE DOMESTIC SOURCE SHOULD NOT BE UNIQUELY DETERMINED, EXCEPT AS AUTHORIZED BY THE PRESIDENT OF THE UNITED STATES.

Section 212 (c) (4) of S.425 provides that alternative regulations may be applied to surface mining operations for minerals having "no practicable alternative domestic source." Authority for determining whether a particular mineral has an alternative domestic source is apparently given to the Secretary of the Interior.

I recommend that this provision be dropped from the final Act, except where it applies under the temporary suspension authority granted to the President in Section 407 of S.425.

Because of the current national concern over domestic petroleum supplies and the belief by some people that foreign imports should be held to a minimum, I fear that oil shale might be given special privileges under the rubric of "no practicable alternative domestic source." If oil shale should be found deserving of unique treatment, I would prefer that the decision be reached under the more searching requirement of Section 407.

RECOMMENDATION 10: ALL PERMIT APPLICATIONS SHOULD CONTAIN DETAILED INFORMATION ON THE HYDROGEOLOGY AND WATER BUDGET OF THE PROPOSED DEVELOPMENT SITE, TOGETHER WITH DETAILED ASSESSMENT OF THE POTENTIAL AND PROBABLE IMPACTS OF MINERAL DEVELOPMENT ON WATER YIELD. THE ASSESSMENT SHOULD CONSIDER HYDROLOGIC IMPACTS ON RELATED OFFSITE AREAS, AS WELL AS THOSE OCCURRING ON THE LOCAL DEVELOPMENT SITE.

Neither Senate bill gives full consideration to the adverse impacts on water yield which may accompany mineral development. This is a serious oversight in view of the increasing magnitude of mining operations envisioned for the future and the increasing scale of mining already occurring in the water-short arid to semiarid Western states.

Mining activities invariably affect the water budget of development sites through (1) withdrawal and consumptive use of water for mineral processing, or (2) land disturbances that alter the hydrologic parameters controlling surface runoff and groundwater yield. Land disturbances may change the time distribution of water yield, such as increasing or decreasing flood runoff, or they may permanently reduce the total volume of water yield.

The altered hydrologic budget of coal-strip lands in Appalachia and the Midwest has been beneficial in some instances, since the greater infiltration and storage capacity of the porous cast-ground backfill tends to reduce flooding while concurrently decreasing the incidence of low flows. The shallow ponds and lakes created by area stripping, in addition to providing recreational sites, also function to even out the time distribution of stream discharge.

In many cases, however, the altered hydrologic budget of mined lands can be irreversibly deleterious. Using oil shale development as an example, it can be noted that all three recovery systems--surface mining, underground mining, and in situ retorting--would alter the hydrogeology of development sites (Weaver, 1972a). Surface runoff would be directly affected by open pit mining, spent shale disposal, road construction, grading of in-situ well sites, and similar disturbances. Groundwater systems could be radically altered by open pit or underground mining, well drilling and pumpage, and in-situ fracturing and retorting.

Although the magnitude of changes in water yield cannot be specified without reference to particular recovery systems and development sites, some generalizations can be made to point out the possible scope and importance of the problem:

1) A minimum sized plant using mine recovery and surface retorting would necessarily cover several hundred to several thousand acres of land with spent shale residue (table 2). Storm runoff from the dump sites would be impounded during active buildup of the residues, and should be permanently impounded to protect downstream areas from sediment erosion and surface leaching of the reclaimed spoil. The

cumulative depletion caused by impounding runoff from many shale dumps could be substantial, at least relative to the normal water yield. Evaporative losses from numerous stock reservoirs in the semiarid Upper Cheyenne River Basin, for example, have been shown to reduce annual runoff in the watershed by 40 percent (Culler, 1961). Reduced runoff in the oil shale basins would be especially critical, since the volume of streamflow is already limited both for withdrawal use and for dilution of waste discharges.

2) Groundwater recharge is mainly by seepage of precipitation and streamflow on the topographically higher, more humid basin margins. Because of the low rates and limited areal extent of replenishment, groundwater systems would be especially sensitive to overdraft of aquifers or disruption of intake areas. Coffin and coworkers (1971) warn that intensive well pumpage in the central Piceance Creek Basin would cause water levels to decline several hundred feet in less than 1 year. Continuous pumpage for a number of years could dry up springs over a large part of the basin and stop much of the base flow to creeks. High pumpage rates would be required in some cases simply to prevent flooding of active mines.

3) It appears self-evident that the hydrogeology of the oil shale basins would be drastically altered by a mature industry operating over many years. Mining of the substrata under tens to hundreds of square miles would create a labyrinth of new underground voids. Unsealed or poorly sealed core holes, well bores, and mine shafts sunk through confining beds would destroy existing boundary conditions. Groundwater overdrafts may result in aquifer compaction, with permanent reduction in storage capacity. In short, the original groundwater system could be transformed beyond recognition.

4) Consumptive use requirements for oil-shale processing and related urban needs are estimated to range between 71 and 138 gallons per barrel of shale oil capacity (U.S. Dept. Interior, 1972, table III-8). Most of this consumptive use, together with the inadvertent water depletions described above, would be translated into reduced streamflow in the Colorado River main stem. The reduced streamflow would be most keenly felt by water users in Arizona, southern Cali-

fornia, and Mexico, since the depletions would reduce the volume of water available for dilution of downstream salinity loads.

The above comments demonstrate that mining operations can produce deleterious impacts on water yield, and that such impacts may be felt in areas far removed from the physical confines of the development site. To minimize or prevent depletions of water yield, it is recommended that the mining and reclamation permit application contain detailed information on the hydrogeology and water budget of the proposed development site, together with detailed assessment of the potential and probable impacts on water yield of mineral development. The assessment should consider hydrologic impacts on related offsite areas, as well as those occurring on the local development site.

Study should also be made of the feasibility of empowering the regulatory agency to limit the amount of water consumptively used in mineral process operations whenever the amount so used can be reduced at reasonable cost to the permittee.

Preventing unnecessary depletion of water yield in the permit application process is especially important, since in many cases the depletions will be irreversible and therefore not treatable by reclamation.

RECOMMENDATION 11: HYDROLOGIC DATA AND IMPACT ASSESSMENTS CONTAINED IN THE PERMIT APPLICATION SHOULD CONSIDER THE POTENTIAL AND PROBABLE HAZARDS OF WATER POLLUTION BY SEDIMENTS AND BY ACID, MINERALIZED, OR TOXIC MATERIALS.

S.425 recognizes the water pollution potential of siltation and acid drainage, but gives little or no attention to mineralized and toxic materials. Section 201 (b) (3) (iii) of S.923 requires that water management be conducted such that "water pollution by siltation and by acid, highly mineralized or toxic material drainage is minimized." The more comprehensive provision of S.923 is preferable to the narrow provision of S.425.

The potential sources and types of water quality detriments associated with oil shale processing are listed in table 3. Items of special concern to the proposed legislation are sediment and mineral pollution.

TABLE 3 -- POTENTIAL SOURCES AND TYPES OF WATER QUALITY DETRIMENTS ASSOCIATED WITH OIL-SHALE DEVELOPMENT

Source of Pollution	Type of Pollution*
Mining and Surface Retorting Systems:	
Erosion of mine tailings	S, M
Erosion of spent shale dumps	S, M, T
Leaching of spent shale dumps	M, T
Dewatering of mine sites	M
In-Situ Recovery Systems:	
Dewatering of shale deposit prior to retorting	M
Fracturing of oil-shale deposit	M, R
Well drilling, retorting, oil recovery	M, T
Leaching of retorted in-situ shale dump	M, T
Mining and In-Situ Recovery Systems:	
Erosion of access roads and other disturbed areas	S, M
Disposal of retort water	M, T, N
Disposal of process water	M, T, N, H
Accidental oil spills	T
Consumptive use of process water	S, M
Consumptive use and effluent releases by new population and auxiliary industries	S, M, T, N, H

* S = sediment; M = mineral (dissolved solids); T = toxic (oils, phenols, toxic metals, etc.); N = nutrient (nitrogen and phosphorus); H = thermal; R = radionuclides

Data compiled from Weaver (1972a, tables 6.10 and 7.3)

Possible sources of mineral pollution include salt loading by industrial and municipal return flows, improper disposal of saline mine drainage, improper disposal of saline groundwaters or retort waters pumped from in-situ development sites, and leaching of spent shale dumps.

The salt loads of industrial and municipal return flows could be removed by treatment, albeit only athigh cost since conventional primary-secondary facilities are not designed to handle dissolved solids. The pollution hazard of return flows would depend primarily on the nature and volume of industrial wastes. Colony Development Operation claims that its plant would not discharge any process water to flowing streams (Hutchins and coworkers, 1971).

The pollution hazard of excess saline mine drainage and in-situ waters would vary widely among development sites. Where present the hazard must be resolved before disposal operations begin, since the resulting pollution may be irreversible. The threat of irreversibility would be equally great for intensive well pumpage or other disturbances that may alter initial groundwater salinity gradients.

All investigators agree that spent shale contains high amounts of extractable sodium, calcium, magnesium, and sulfate ions, and that leaching of the dumps by overland flow or water percolate would constitute very serious water pollution (Schmehl and McCaslin, 1972; U.S. Dept. Interior, 1972; Ward and coworkers, 1971; Ward and Reinecke, 1972). However, realization of the inherent pollution potential would depend on the manner of disposal and degree of compaction of the material, local precipitation amounts and timing, evapotranspiration rates, and other factors. Hence there is disagreement on the actual pollution threat.

My own feeling is that dump sites must be selected with extreme care, and that even the more favorable sites should be lined with an artificial barrier to intercept subsurface waters and dammed to impound runoff from the reclaimed dump surface. Recommending such extreme protective measures is based on the following considerations:

1) The total volume and surface area of spent shale wastes from a mature industry would be unusually large. Thus the inherent mineral

pollution hazard would be proportionately high.

2) Mineralized drainage from the dumps would contain high concentrations of sodium, which is a particularly injurious ion to agricultural water users. Sodium content would be extremely high in the drainage from dump residues mined from the oil shale saline facies.

3) Mineralized drainage reaching surface waters would exacerbate the already critical salinity pollution problem in the Colorado River Basin (U.S. EPA, 1971).

4) Treatment of any unanticipated drainage problem that nonetheless occurred would be very difficult to achieve. Emplacement of the spent shale is an irreversible process. Mineral pollution resulting from emplacement may also be irreversible in some cases. The problems of after-the-fact treatment would be similar to the present difficulty of controlling acid drainage from abandoned mined lands in Appalachia.

5) Active dumps would function as depositories for various waste effluents, including partially treated retort water and refinery sour condensate, and untreated boiler-water blowdown, cooling-water blowdown, saline mine drainage, and chemicals used in oil upgrading operations.

Impoundment of runoff from dump surfaces is recommended here to protect downstream areas from both mineralized drainage and eroded sediments. The two pollution forms are not completely separable, as the sediments carried into receiving streams may also undergo solution and thereby contribute to mineralization of the streams. However, sediment pollution should be avoided for its sake alone, especially if the sediments are eroded from dumps composed of finely divided unburned residues. Because of the fine texture and dark color of these spent shale residues, a high wash load of the materials would cause the stream to run black.

The Department of the Interior (1972) NEPA draft statement for oil shale presents a generally optimistic assessment of the technical ability to manage water pollution problems. I do not share the same optimism, at least under the present state of knowledge (or lack thereof).

RECOMMENDATION 12: THE PERMITTEE SHOULD BE FINANCIALLY RESPONSIBLE FOR THE LONG-TERM MAINTENANCE AND REPAIR OF RECLAMATION MEASURES ESSENTIAL TO THE HOMEOSTASIS OF THE DEVELOPMENT SITE.

Homeostasis is the tendency of an ecosystem to maintain relatively stable conditions by means of its own regulatory mechanisms. A high degree of homeostasis implies that the ecosystem will resist external perturbations, or if disturbed it will tend to evolve back to its original condition.

Reclaimed lands may or may not have high degrees of homeostasis. For example, any permanent water diversion or impoundment structures built to protect spent shale dumps would become ineffective over time as they become filled with sediments. Untreated spent shales exposed by accelerated erosion would constitute very sterile soil material. Natural revegetation of these truncated surfaces would take a very long time, and would culminate in a ground cover much inferior to that established during the reclamation process.

Section 210 (b) (1) of S.425 provides that no performance bond shall be fully released until all reclamation requirements of the Act are fully met. Precisely when are all reclamation requirements fully met? As soon as the water management structures are in place and inspected by the regulating agency? As soon as the spent shale dump shows a first-season growth of newly established plants?

I believe that a specific time frame should elapse before the permittee is released from his obligation. Whether the time frame should be five years, ten years, or longer, I am not prepared to say; but it should definitely be long enough to give a reasonable test of the homeostasis of the reclaimed area, consistent with existing legal and economic concepts of long-term liability.

CONCLUSION: Although I have not attempted a full point-by-point comparison of the two Committee bills on mined-land conservation, I do find myself in more general agreement with S.425. I especially praise its recognition of the need for an Office of Land Use Policy, Reclamation, and Enforcement (Sec. 202), Federal inspections (Sec. 213), Federal enforcement if the State fails to act (Sec. 214), designation of lands unsuitable for surface mining (Sec. 215), joint Federal-State Program for interspersed Federal lands (Sec. 216), reclamation of abandoned mined areas (Title III), and funding of research and demonstration projects (Sec. 404).

At the same time I encourage the Committee to note the recommendations given here and those offered by Dr. Ward, so that the final Mined-Land Act will give even brighter promise for environmental protection of the Nation's land resources.

Thank you.

REFERENCES CITED:

Brooks, D. B., 1966, Strip mine reclamation and economic analysis: Natural Resources Jour., v. 6, p. 13-44.

Cochran, W., 1971, Mine subsidence -- extent and cost of control in a selected area: U.S. Bur. Mines Info. Circ. 8507, 32 p.

Coffin, D. L., and coworkers, 1971, Geohydrology of the Piceance Creek structural basin between the White and Colorado Rivers: U.S. Geol. Survey Hydrol. Inv. Atlas HA-370, 2 sheets.

Culler, R. C., 1961, Hydrology of stock-water reservoirs in Upper Cheyenne River Basin: U.S. Geol. Survey Water-Supply Paper 1531-A, 136 p.

Hutchins, J. S., and coworkers, 1971, The environmental aspects of a commercial oil shale operation: Am. Inst. Mining, Metallurgical, and Petrol. Engineers, Environmental Quality Conf., Preprint No. EQC-25, p. 59-68.

Schmehl, W. R., and McCaslin, B. D., 1972, Some properties of spent oil-shale significant to plant growth: Fort Collins, Colo. Agr. Expt. Sta. Scientific Series Paper No. 1496, 26 p.

U.S. Department of the Interior, 1971, Draft environmental impact statement for the prototype oil shale leasing program: Washington, D.C., U.S. Dept. Interior, 124 p.

----------, 1972, Draft environmental statement for the proposed prototype oil shale leasing program: Washington, D.C., U.S. Dept. Interior, 3 vols.

U.S. Environmental Protection Agency, 1971, The mineral quality problem in the Colorado River Basin: U.S. EPA, Regions VIII and IX, 5 vols.

U.S. Federal Water Pollution Control Administration, 1968, Economic impact of a hypothetical shale oil industry: San Francisco, Southwest Region, unpublished, 12 p. + app.

Ward, J. C., and coworkers, 1971, Water pollution potential of spent oil shale residues: U.S. Environmental Protection Agency, Water Pollution Control Research Series 14030 EBD 12/71, 116 p.

Ward, J. C., and Reinecke, S. E., 1972, Water pollution potential of snowfall on spent oil shale residue: Report prepared for U.S. Bur. Mines, Laramie Energy Research Center, Grant No. G0111280.

Weaver, G. D., 1972a, Environmental hazards of oil-shale development: Report prepared for the Conservation Foundation, Washington, D.C., 2 vols., 312 + 72 p.

----------, 1972b, Comments on the Department of the Interior draft environmental statement for the proposed prototype oil shale leasing program: Report submitted to the Oil Shale Coordinator, U.S. Dept. Interior, 28 p.

RECOMMENDATIONS:

1) An Office of Land Use Policy, Reclamation, and Enforcement should be established to administer the Mined-Land Act, but the Office should be housed in the Environmental Protection Agency rather than in the Department of the Interior.

2) Regulations adopted to meet performance standards of the Act should be set in accordance with a cost-benefit analysis that considers both market and nonmarket values. Special effort should be made to identify the market-valued costs of environmental damages, as well as the private costs of avoiding the damages.

3) Personnel recruited for the Office of Land Use Policy, Reclamation, and Enforcement should include resource economists skilled in the evaluation of environmental diseconomies.

4) Research funds should be provided to advance the expertise needed for economic evaluation of mined-land conservation.

5) A joint Federal-State Program for administering mining permits and reclamation plans should be implemented before allowing any commercial-scale oil shale operations.

6) Hazards of land subsidence and change in the water balance associated with underground mining should be regulated by the Mined-Land Act.

7) Land disturbances associated with the solid waste output of smelter and refining operations should be regulated by the Mined-Land Act.

8) Permit applications for experimental mining operations should be as thoroughly evaluated as permits for commercial operations.

9) Criteria for mining and reclamation operations for minerals having no practicable alternative domestic source should not be uniquely determined, except as authorized by the President of the United States.

10) All permit applications should contain detailed information on the hydrogeology and water budget of the proposed development site, together with detailed assessment of the potential and probable impacts of mineral development on water yield. The assessment should consider hydrologic impacts on related offsite areas, as well as those occurring on the local development site.

11) Hydrologic data and impact assessments contained in the permit application should consider the potential and probable hazards of water pollution by sediments and by acid, mineralized, or toxic materials.

12) The permittee should be financially responsible for the long-term maintainance and repair of reclamation measures essential to the homeostasis of the development site.

Senator METCALF. It looks to me as if one of the persons down here with the witness is the Congressman from West Virginia. We are delighted to have you back, Congressman Hechler, and as I understand it, you are going to introduce your colleagues from West Virginia.

Mr. HECHLER. In about 5 seconds I can do that.

I am very honored that the committee will have an opportunity today to hear from Dr. William H. Miernyk on my left, professor of economics and director of the Regional Research Institute of West Virginia, and Dr. Robert Smith, on my right, Division of Forestry, West Virginia University.

The real problem this committee faces, of course, is how to achieve objectivity, and I believe there has been so much emotionalism in this subject that it is necessary to have the type of objectivity which will be presented by these two noted academicians.

Senator METCALF. Every witness who has testified has been completely unbiased and absolutely objective, so we are delighted to have two more of those objective witnesses.

Dr. Miernyk.

STATEMENT OF WILLIAM H. MIERNYK, BENEDUM PROFESSOR OF ECONOMICS AND DIRECTOR, REGIONAL RESEARCH INSTITUTE, WEST VIRGINIA UNIVERSITY, AND ROBERT LEO SMITH, UNIVERSITY OF WEST VIRGINIA

Dr. MIERNYK. Yes, Senator, thank you.

I appreciate the opportunity to appear before this committee to express my views on the economics of surface mining in Appalachia. And, I would like to emphasize that my concern is with the economics of this form of extractive activity.

There is, of course, interdependence between the economic and environmental consequences of surface mining, but others are better qualified than I to testify on environmental matters, and I am leaving all these matters to my colleague Dr. Smith.

Some ecologists evidently feel that if we are to protect the environment for the enjoyment of present and future generations, society must be prepared to make certain sacrifices today.

I am sure that in some circumstances this is true, but I do not subscribe to this view when applied to Appalachian strip mining.

My opinion is that continued surface mining in Appalachia, which obviously produces short-term economic gains, will result in long-term economic losses to the region. I also believe that the long-term losses will be far greater than the short-term gains.

I do not go into an extensive statistical discussion of surface mining in Appalachia in this statement. The excellent study recently prepared by the Council on Environmental Quality provides the necessary statistical information. This is an extremely useful study since it is the first one, to my knowledge, that provides estimates of both current production and strippable reserves as functions of the slope angle.

Estimates of this kind have been needed for some time. And while some of the data, particularly those dealing with strippable reserves,

may be subject to error, they are certainly within the range of reliability which permits them to be used for making policy decisions.

Is surface mining essential? Surface mining is not a new method of extracting coal, but 20 years ago only a small fraction of the Nation's coal was produced by strip and auger mining methods.

Now, as the result of changes in earthmoving and transportation technology, more than half of the Nation's coal is produced by surface-mine methods. And this fraction has kept rising each year.

Publicists for the coal industry have gone to some lengths to create the impression that surface mining is essential if the Nation's energy needs are to be met.

Clearly, if surface mining were to be abolished tomorrow the Nation would be faced with a severe energy crisis. But even those who advocate complete abolition of surface mining, such as Congressman Ken Hechler from my State, would allow for an adequate period of adjustment.

The reason that we need surface-mined coal today is that we failed to plan for our energy needs more than a decade ago. If surface mining had been prohibited 10 to 20 years ago we would still be producing the same amount of coal in this country today.

The average price per ton would be higher, of course, but it should be higher. The low price of surface-mined coal conceals the social costs of this method of extraction which are recognized explicitly in the statement of findings and policy of S. 425.

The fact that the Nation has a surface-mine problem today reflects a lack of foresight and planning by policy makers in the past. The longer Congress delays in dealing with this problem, the more dependent we will become upon surface-mined coal, and the more difficult it will be to take necessary corrective action.

Given the abundant reserves of deep coal in this country, we are not dependent on surface coal for energy. Surface mining is not essential to our economic well-being. As it is practiced in the United States, it is detrimental to the environment. And the residents of surface-mined areas pay a high price for the energy supplied to others by strip mined coal.

In regard to the economic consequences of surface-mine restrictions, one of the first steps in a plan of ultimate control of surface mining shold be the imposition of slope limitations.

I favor the total prohibition of surface mining on slopes exceeding 20 degrees, and strict regulation of the method employed to extract coal from land that has a slope ranging between 10 and 20 degrees.

Essentially, such regulations would prohibit the deposit of any part of the overburden downslope from the lowest point of the land to be mined. Equally important would be a regulation that all toxic materials be carefully segregated from the general overburden, and that before the overburden is replaced, the toxic materials be sealed to prevent subsequent leaching of sulphur oxides. This proposal would have its greatest impact on strip mining in Appalachia.

Those who object to slope limitations might argue that such a law would give Western States an unfair advantage. But the cost of shipping coal long distances is high relative to its value at the mine.

Furthermore, much of the coal being surface-mined in States, such as Montana is of lower quality than Appalachian coal. Because western coal produces fewer Btus per ton, larger quantities of coal must be consumed to produce a unit of electric energy.

Also, because of more rapid population growth, the demand for electric energy is increasing at an even faster rate in the West than it is in the East. Western surface coal should not be regarded as an economically feasible substitute for Appalachian coal.

Clearly, there would be a period of readjustment following the imposition of slope limitations. But the long run result of these limitations would be the expansion of deep mining in Appalachia. The production of electric energy in the United States continues to increase at an annual rate of about 7 percent.

As long as this continues there can be no doubt that all sources of coal will be exploited. At some time in the future the rate of increase in the production of electric energy will have to slow down, since in a finite world nothing can grow at an exponential rate indefinitely. But even when the rate of growth slows down the number of megawatts of electricity generated will continue to increase in absolute terms.

Those who argue that the control of surface mining in Appalachia would reverse the recent upward trend in the regional economy are thinking in purely static terms. The control of surface mining would cause temporary dislocations in Appalachia, but it would not slow down the long run development of the region.

Indeed, I believe that failure to control surface mining in the region is more likely to be detrimental to the development of this area because of the high opportunity costs of surface mining.

In 1965, under the Appalachian Regional Development Act, Congress authorized the expenditure of $2 billion for a regional development highway system in Appalachia. The States were required to match this amount, so that a minimum of $4 billion will be spent on the new highway system.

The purpose of the Appalachian development highways is to provide links, primarily in an east-west direction, with the region's interstate highway system in an effort to attract new economic activity to Appalachia. This large investment in social overhead capital might well become nugatory if surface mining is permitted to continue to expand in the region.

Only to a limited extent were the development highways designed to encourage tourism in Appalachia. The hope of those who planned the development highway system was for more stable and longer lasting benefits.

One of Appalachia's great attractions is the natural beauty of the areas that have not been despoiled by surface mining or other activities that are environmentally detrimental.

There is a wide range of economic activities that can be attracted to a region by its amenities. The development of the "front range" region of Colorado since the end of World War II, for example, can be explained only in terms of the amenities which the State has had to offer.

Appalachia is much closer to dense eastern market, and with an adequate highway system there is a good chance that the region will experience amenity-oriented economic growth. But if the region's hill-

sides are scarred, and its streams and akes polluted by unrestrained surface mining, this type of economic development is not likely to occur.

The expansion of amenity-oriented activities in Appalachia is entirely consistent with the expansion of underground coal mining. Furthermore, a study by the Regional Research Institute completed about 2 years ago has demonstrated that after the necessary adjustments have been made, the replacement of surface mining by expanded deep mining would have a positive economic impact on the region. The long-run consequences of a shift from surface to deep mining would be a modest increase in employment and a substantial increase in new capital investment in the region.

Those involved in the well-financed public relations activities of the coal industry insist on the necessity of surface mining, and assert repeatedly that the expansion of surface mining is essential if we are to avoid an energy crisis.

But these assertions are not supported by analytical evidence. Even those who are directly involved in the surface mining of coal recognize the temporary nature of their activity. The vast bulk of coal in this country can be produced only by underground methods. This means at some time in the future there will have to be a substantial expansion of underground mining. Since this is inevitable, why delay?

All reasonable proposals for the regulation or even the abolition of surface mining provide for a transitional period. This would provide time to expand deep mine capacity. Anything that contributes to the delay of effective regulation is welcomed by spokesmen for the coal industry, however.

Proposals to make further studies or to examine surface mining from still another point of view contribute to this delay. Thus, the coal industry should be pleased by section 217 of S. 425 which calls for further study of slope limitations.

The bill would require the Chairman of the Council on Environmental Quality to direct a study that would examine the impacts of imposing or failing to impose slope limitations.

A study of the scope that appears to be contemplated by the proposed budget of $2 million might require a considerable length of time. I fail to see the necessity of this study. The work that has already been done by the Council on Environmental Quality which relates coal production and reserves to various slopes has provided all the information that Congress needs to make a decision.

There has been too much concern about the immediate economic impacts of restrictions on surface mining, and too little concern about long-run considerations, both economic and environmental. Instead of appropriating funds for further study of slope limitations, Congress should be appropriating much larger amounts to develop a rational, economic, and environmentally sound method of providing for our expanding energy requirements.

We continue to use coal in ways that are technologically obsolete. The tiny program we have now to encourge the gasification of coal should be expanded rapidly. Similarly, more resources should be devoted to the production of petroleum from coal.

Low Btu gasification plants could be located throughout Appalachia to provide electric energy for much of the Eastern United States. Similarly, petroleum derived from coal would lessen our dependence on Middle Eastern oil. The abundant underground reserves of coal are sufficient to provide for our energy needs for a long time, and by that I mean for centuries.

We are not dependent at all on the relatively small amount of our total reserves that can be extracted by surface-mine methods. Any delay in the regulation of surface mining will only add to the Nation's environmental problem.

If legislation to regulate surface mining is adopted now, enough time can be allowed for an orderly transition to expanded deep mining, and at the same time efforts can be made to "reclaim" disturbed land.

If we procrastinate long enough, however, regulation will not be necessary. At some time in the not too distant future, most of the coal that is easily accessible to surface mining will have been stripped. We will then be forced to return to the underground method that has provided most of our coal throughout most of our history.

By its nature surface mining is a "fly by night" type of economic activity. It appears to be a highly efficient method of obtaining needed fuel. But this is misleading. It is efficient only when we fail to consider the subsidy that society contributes to the substantial profits enjoyed by those who operate this segment of the coal industry.

Thank you.

[The complete statement of Mr. Miernyk follows:]

THE ECONOMICS OF SURFACE MINING IN APPALACHIA

by

William H. Miernyk
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West Virginia University

Statement Prepared for The Committee on Interior and Insular Affairs,
United States Senate, March 15, 1973

I appreciate the opportunity to appear before this Committee to express my views on the economics of surface mining in Appalachia. And I would like to emphasize that my concern is with the economics of this form of extractive activity. There is, of course, interdependence between the economic and environmental consequences of surface mining, but others are better qualified than I to testify on environmental matters.

Some ecologists evidently feel that if we are to protect the environment for the enjoyment of present and future generations, society must be prepared to make certain economic sacrifices today. I am sure that in some circumstances this is true, but I do not subscribe to this view when applied to Appalachian strip-mining. My opinion is that continued surface mining in Appalachia -- which obviously produces short-term economic gains -- will result in long-term economic losses to the region. I also believe that the long-term losses will be far greater than the short-term gains.

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production and strippable reserves as functions of the slope angle. Estimates of this kind have been needed for some time. And while some of the data -- particularly those dealing with strippable reserves -- may be subject to error they are certainly within the range of reliability which permits them to be used for making policy decisions.

Is Surface Mining Essential?

Surface mining is not a new method of extracting coal. But twenty years ago only a small fraction of the nation's coal was produced by strip and auger mining methods. Now, as the result of changes in earth-moving and transportation technology, more than half of the nation's coal is produced by surface-mine methods. And this fraction has kept rising each year. Publicists for the coal industry have gone to some lengths to create the impression that surface mining is essential if the nation's energy needs are to be met. Clearly, if surface mining were to be abolished tomorrow the nation would be faced with a severe energy crisis. But even those who advocate complete abolition of surface mining, such as Congressman Ken Hechler from my state, would allow for an adequate period of adjustment. The reason that we need surface-mined coal today is that we failed to plan for our energy needs more than a decade ago. If surface mining had been prohibited ten to twenty years ago we would still be producing the same amount of coal in this country today. The average price per ton would be higher, of course, but it should be higher. The low price of surface-mined coal conceals the social costs of this method of extraction which are recognized explicitly in the statement of findings and policy of S.425.

The fact that the nation has a surface-mine problem today reflects a lack of foresight and planning by policy makers in the past. The longer

Congress delays in dealing with this problem, the more dependent we will become upon surface-mined coal, and the more difficult it will be to take necessary corrective action. Given the abundant reserves of deep coal in this country, we are not dependent on surface coal for energy. Surface mining is not essential to our economic well-being. As it is practiced in the United States it is detrimental to the environment. And the residents of surface-mined areas pay a high price for the energy supplied to others by strip-mined coal.

The Economic Consequences of Surface-Mine Restrictions

One of the first steps in a plan of ultimate control of surface mining should be the imposition of slope limitations. I favor the total prohibition of surface mining on slopes exceeding twenty degrees, and strict regulation of the method employed to extract coal from land that has a slope ranging between ten and twenty degrees. Essentially, such regulation would prohibit the deposit of any part of the overburden downslope from the lowest point of the land to be mined. Equally important would be a regulation that all toxic materials be carefully segregated from the general overburden, and that before the overburden is replaced, the toxic materials be sealed to prevent subsequent leaching of sulphur oxides. This proposal would have it's greatest impact on strip mining in Appalachia.

Those who object to slope limitations might argue that such a law would give western states an unfair advantage. But the cost of shipping coal long distances is high relative to its value at the mine. Furthermore, much of the coal being surface-mined in states such as Montana is of lower quality than Appalachian coal. Because western coal produces fewer BTUs per ton, larger quantities of coal must be consumed to produce

a unit of electric energy. Also, because of more rapid population growth, the demand for electric energy is increasing at an even faster rate in the West than it is in the East. Western surface coal should not be regarded as an economically feasible substitute for Appalachian coal.

Clearly, there would be a period of readjustment following the imposition of slope limitations. But the long run result of these limitations would be the expansion of deep mining in Appalachia. The production of electric energy in the United States continues to increase at an annual rate of about 7 per cent. As long as this continues there can be no doubt that all sources of coal will be exploited. At some time in the future the rate of increase in the production of electric energy will have to slow down, since in a finite world nothing can grow at an exponential rate indefinitely. But even when the rate of growth slows down the number of megawatts of electridity generated will continue to increase in absolute terms.

Those who argue that the control of surface mining in Appalachia would reverse the recent upward trend in the regional economy are thinking in purely static terms. The control of surface mining would cause temporary dislocations in Appalachia, but it would not slow down the long run development of the region. Indeed, I believe that <u>failure</u> to control surface mining in the region is more likely to be detrimental to the development of this area because of the high opportunity costs of surface mining.

In 1965, under the Appalchian Regional Development Act, Congress authorized the expenditure of $2 billion for a regional development

highway system in Appalachia. The states were required to match this amount, so that a minimum of $4 billion will be spent on the new highway system. The purpose of the Appalachian development highways is to provide links -- primarily in an east-west direction -- with the region's interstate highway system in an effort to attract new economic activity to Appalachia. This large investment in social overhead capital might well become nugatory if surface mining is permitted to continue to expand in the region.

Only to a limited extent were the development highways designed to encourage tourism in Appalachia. The hope of those who planned the development highway system was for more stable and longer-lasting benefits. One of Appalachia's great attractions is the natural beauty of the areas that have not been despoiled by surface mining or other activities that are environmentally detrimental. There is a wide range of economic activities that can be attracted to a region by its amenities. The development of the "Front Range" region of Colorado since the end of World War II, for example, can be explained only in terms of the amenities which the state has had to offer. Appalachia is much closer to dense eastern market, and with an adequate highway system there is a good chance that the region will experience amenity-oriented economic growth. But if the region's hillsides are scarred, and its streams and lakes polluted by unrestrained surface mining, this type of economic development is not likely to occur.

The expansion of amenity-oriented activities in Appalachia is entirely consistent with the expansion of underground coal mining. Furthermore, a study by the Regional Research Institute completed about two years ago has demonstrated that after the necessary adjustments

have been made, the replacement of surface mining by expanded deep mining would have a positive economic impact on the region. The long-run consequences of a shift from surface to deep mining would be a modest increase in employment and a substantial increase in new capital investment in the region.[1/]

Those involved in the well-financed public relations activities of the coal industry insist on the necessity of surface mining, and assert repeatedly that the expansion of surface mining is essential if we are to avoid an energy crisis. But these assertions are not supported by analytical evidence. Even those who are directly involved in the surface mining of coal recognize the temporary nature of their activity. The vast bulk of coal in this country can be produced only by underground methods. This means that at some time in the future there will have to be a substantial expansion of underground mining. Since this is inevitable, why delay?

All reasonable proposals for the regulation or even the abolition of surface mining provide for a transitional period. This would provide time to expand deep mine capacity. Anything that contributes to the delay of effective regulation is welcomed by spokesmen for the coal industry, however. Proposals to make further studies or to examine surface mining from still another point of view contribute to this delay. Thus, the coal industry should be pleased by Sec. 217 of S.425 which calls for further study of slope limitations.

1/ The details of this study, which utilized a dynamic, regional input-output model, were reported in "Environmental Management and Regional Economic Development," presented to the Southern Economic Association and the Southern Regional Science Association, at Miami Beach, Florida, November 6, 1971. Further details are given in a chapter to be included in a collection of essays dealing with regional economic development and environmental management in a forthcoming book edited by Professor Charles Howe of the University of Colorado.

The bill would require the Chairman of the Council on Environmental Quality to direct a study that would examine the impacts of imposing or failing to impose slope limitations. A study of the scope that appears to be contemplated by the proposed budget of $2 million might require a considerable length of time. I fail to see the necessity of this study. The work that has already been done by the Council on Environmental Quality which relates coal production and reserves to various slopes has provided all the information that Congress needs to make a decision.

There has been too much concern about the immediate economic impacts of restrictions on surface mining, and too little concern about long-run considerations, both economic and environmental. Instead of appropriating funds for further study of slope limitations, Congress should be appropriating much larger amounts to develop a rational, economic, and environmentally sound method of providing for our expanding energy requirements. We continue to use coal in ways that are technologically obsolete. The tiny program we have now to encourage the gasification of coal should be expanded rapidly. Similarly, more resources should be devoted to the production of petroleum from coal. Low BTU gasification plants could be located throughout Appalachia to provide electric energy for much of the eastern United States. Similarly, petroleum derived from coal would lessen our dependence on middle eastern oil. The abundant underground reserves of coal are sufficient to provide for our energy needs for a long time. We are not dependent at all on the relatively small amount of our total reserves that can be extracted by surface-mine methods. Any delay in the regulation of surface mining will only add to the nation's environmental problem. If legislation to regulate surface

mining is adopted now enough time can be allowed for an orderly transition to expanded deep mining, and at the same time efforts can be made to "reclaim" disturbed land. If we procrastinate long enough, however, regulation will not be necessary. At some time in the not too distant future, most of the coal that is easily accessible to surface mining will have been stripped. We will then be forced to return to the underground method that has provided most of our coal throughout most of our history.

By its nature surface mining is a "fly by night" type of economic activity. It appears to be a highly efficient method of obtaining needed fuel. But this is misleading. It is efficient only when we fail to consider the subsidy that society contributes to the substantial profits enjoyed by those who operate this segment of the coal industry.

Senator METCALF. Thank you very much, Dr. Miernyk for another approach, an economic approach to consideration of the surface mining.

Underground mining is one of the problems it presents in our various efforts to use the coal resources of America for the best benefit of the country. And at the same time I know some places in the West resemble the pictures that Congressman Hechler brought here from West Virginia.

Certainly we are impressed with your statement with you coming as you do from probably the State that has the largest coal supply in the country, and some of the greatest problems already, although it looks to me as if we don't do something, the State of Montana is accumulating some of the problems. You are familiar because you mentioned that the CEQ study—are you satisfied with those statistics and with some of their analysis of Appalachian slope limitations?

Dr. MIERNYK. I am satisfied with the statistics, I am not satisfied with the conclusions that have been derived from some of those statistics, that is the various impacts that have been simulated. I think the way in which those impacts were reached is not clear from the study itself, and I think the conclusions should be taken with a grain of salt. But, I do think that the basic statistics themselves are not only usable estimates, but probably the best estimates available at the present time.

Senator METCALF. We will now have a short recess.

[Recess.]

Senator METCALF. The committee will be in order.

Dr. Smith, I came back as soon as possible. You take whatever time is available, if you choose.

STATEMENT OF ROBERT LEO SMITH, UNIVERSITY OF WEST VIRGINIA

Dr. SMITH. I would like to move along rather rapidly. I feel there are several points I would like to make to reemphasize which my written testimony will elaborate on.

One, I think in the Appalachian region there is a very urgent need for slope limitation, particularly in the southern mountain portions.

The CEQ report should be looked at very carefully as to statistics on the amount of slope on which the reservable strip coal lies, which is 41.4 percent on slopes of 15 ° or more, that is a 27 percent slope. But, when you get into the heart of the coal country in southern West Virginia, eastern Kentucky and Tennessee. you are getting into areas where a great deal of this coal lies under slopes which are much greater than 15°, up to 40 percent or more, and some of them even going up to 6.5 percent.

I point out in my testimony for example, in some parts of the coal country in West Virginia 80 percent of the strippable reserves in Boone County, 77 percent in Logan, 59 percent in Mingo lie under slopes of 40 percent or more. There is a very steep lie. Yet, in Boone County alone, the total coal reserve only 6.5 percent of this reserve is strippable, but in order to get at this strippable reserve you can eliminate the entire county physically because the coal underlies the entire county. And in our mountain country to get at this coal, we are not

dealing with just simply one seam of coal under slope, we are dealing with three or four seams of coal which are from the bottom and work up to the top.

In Boone County, Logan County, Mingo, many of these areas in the southern mountains in Kentucky, it is a case of starting in a lower seam and working up the mountainside and perhaps close up to the top, going in and moving the top of the mountain so that in the end what we have is nothing but raw mountains, a slope of raw earth from top to bottom.

Without going into any further detail here, I would just simply say categorically, and if you want any more information I would be happy to give it to you later, that I also remarked upon in the testimony that reclamation is impossible. I have spent a number of years in this region, I have grown up in strip mine country and spent a good deal of time down in the southern mountains. I have looked over some of the finest reclamation work which is being done; I am discussing it next week with my strip mining panel; we want to see some pictures of the outstanding reclamation work which has been created by the industry, by the State, Department of Environmental Resources. The point is that you cannot reclaim this land because of the instability of the slopes, the fact that the toxic elements, the erosion, all of these problems which come up, and the enormity of the damages, the area becomes less and less inhabitable, less livable and so by the time we are finished in 10 years or so with strip mining, we will have some 90 percent of the coal left to be mined and yet we would have a country in which no person is going to be able to physically live. You can't understand what the country is like once it has been destroyed unless you can get down there and see what kind of a place it might be to live in a little later on.

Another thing which no one has given any consideration to; I have tried to do a little preaching on the subject, and that is the role of the forests in this country When we get into strip mining the southern mountains—southern West Virginia, Kentucky, Tennessee, we are really beginning to tear up the heart of land of Appalachia. Ecologists and botanists recognize this area as being the finest hardwood growing sites in the world, second only to the one that used to be in China. This is an old refuge of hardwood forests which go back to preglacial times. Once we have eliminated this, we have eliminated the heart of the hardwood growing country in North America.

Now at the present time any coal mine operators, the whole industry will say well this timber on this land is no good now, it is poor, it is mismanaged, we are not going to lose anything, the point is the sites don't grow superb timber.

The Forest Service came out a few weeks ago with a report that we are going on with the timber shortages, that with inherent uses we are going to have a timber supply, a shortage with rising prices in the year 2000. They point out if we are going to increase our timber production supply it is going to have to be done in the eastern woodlands.

So, here we are, in order to get coal for the next 10 years at the most we are going to virtually wipe out the heart of the Appalachian hardwood forest regions, the finest areas of revegetation of the for-

ests in eastern North America, as well as some unknown facts from ecological viewpoints.

While I have the time, I want to make one comment which does not appear in my testimony, and I will send you some more information on it, and that is the thing which has been brought up by the CEQ and also by many members of the coal industry and I believe it was discussed before your committee.

I hope I am not talking too fast here, but the emphasis of this business of block strip mining, I will again state that categorically, in spite of what the industry has to say, you cannot block mine in the southern steep slopes of mountains and not escape the same type of environmental damage that is being done by the conventional contour mining being carried on today.

I have been on areas where block mining is being done, it is not a new technique; it has been used in the mountains down there for a number of years, several years at least. But, it works well if you are doing nothing but mountaintop strip mining, then you can get away with block strip mining. But you cannot get away with block strip mining, it is almost a physical impossibility to do it on those steep slopes.

You simply must realize the enormity of the technical problems involved with starting back up the slope where your highest high wall is going to be, and then you still have to put that first overburden over the slope, once it goes over the slope it goes down the slope and there is no way of getting it back up.

So the damage—I just hope that this committee does not buy this little simplistic story that block mining and strip mining is the answer, because it is not. I will send you further information on that.

Then the other point here is some of the reclamation work essentially involves a planting of grass, the draining of hardwoods then are a great economic importance for shortlived grass.

Now, I have been on many of these areas that have been reclaimed, or supposedly reclaimed, as a matter of fact I got a research study starting on the long range of vegetation development in some of these areas and this grass is very temporary, it is temporary grass and is fertilized with lime for perhaps a year and then they walk away and forget about it; there is no care taken for it after that. So, that grass then simply begins to fade out.

We have this build-up of toxic elements, which I believe Dr. Curry talked about, and which was mentioned several times in testimony here this afternoon. We begin to go back to orphan land again. As a matter of fact the Stanford report claimed this very fact that the vegetation simply is not a permanent thing and simply fades out going right back to orphaned lands again.

I would be glad to answer any questions you might have; we have a few minutes.

Senator METCALF. I greatly respect your need to get on the plane and get out of town.

Dr. SMITH. I am coming back Sunday night.

Senator METCALF. However, this committee is concerned with timber production, especially hardwood production, and the southern pine production and the changeover from the hardwood timber. I

wonder if you would expand on that part of your testimony, if you haven't covered it in your written testimony because we are concerned with the loss of hardwood timber all over the United States, and training timber for grass isn't a very good trade.

Dr. SMITH. I have already discussed that in my testimony, but I would be very glad to send much more material on it. If you would like more material on it, I would be very happy to get some down to you.

[The complete statement of Mr. Smith follows:]

STATEMENT OF DR. ROBERT LEO SMITH BEFORE THE SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS ON SURFACE MINING RECLAMATION LEGISLATION

I welcome this opportunity to call to your attention certain aspects of surface mining that I feel is not being given sufficient attention. This is the impact of surface mining on steep Appalachian slopes.

Recently the Council on Environmental Quality pointed out that Alabama, eastern Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia and West Virginia together produce 108 million tons of coal by stripping slopes 15° (27 percent) or over in 1971. This represents two-thirds of all the strip mine production in the eight state area and is equal to more than the underground production. The Council also points out that 41.4 percent of all strippable reserves lie under slopes of 15° or more. To prohibit stripping on these slopes would result in a production loss of 10 million tons to 42 million tons a year.

Consider only one of these states, West Virginia, which is more adversely affected by strip mining than any other. In West Virginia counties with less than one half of their lands in slopes greater than 15° contain 6 percent of surface mining reserve and 20 percent of current (1970) production, while counties with more than three-quarters of land in slopes over 15° contain 58 percent of reserve and 40 percent of current production.

Now direct your attention to several selected counties in the most mountainous regions where most of the high quality strip reserves lie. A five county area of Boone, Logan, Mingo, Kanawha and Raleigh, contain 48 percent of strippable reserves of the state. Of this reserve 41 percent lies under land of 15° slope and over, and 28 percent under slopes of 40 percent and greater. Matters become more serious when one examines the steepest counties Logan, Mingo, and Boone. Eighty percent of strippable reserves in Boone county, 77 percent of reserves in Logan county, and 59 percent of reserves in Mingo county lie under slopes of 22° (40 percent) and greater. Yet strippable reserves make up 6.5 percent of the total minable coal reserves of Boone county.

The impact that strip mining can have on these areas is enormous. If all of the strippable reserves of Boone county were removed, 79 percent of total area would be disrupted excluding spoil banks. If one uses the spoil bank multiplier of three acres disturbed for every acre strip mined, 240 percent of the county would be disrupted. More realistically the whole county would be affected. The same is true of Logan, Mingo, and Kanawha counties, excluding of course the capital city of Charleston. These statistics indicate the magnitude of the environmental and social problems that are being created by mountain surface mining. The same story repeats itself in the mountains of western Virginia, in eastern Kentucky and Tennessee. What is happening is the destruction of the heartland of Appalachia.

If all of the potentially strippable coal is removed the most of southwestern West Virginia and eastern Kentucky will be uninhabitable. It will have become an economic and ecological desert.

The southern mountains are a product of millions of years of geological erosion. This erosion reduced a broad flat peneplain into a jumble of narrow ridge tops and deep V-shaped valleys. This erosion still continues. If one tramps through these mountains long enough and knows what to observe, it is evident that the soil is still slipping down slope, although very, very slowly.

But when the mountain sides are cut away by contour stripping, conditions are radically changed. In much of the southern and central Appalachians more than one seam of coal outcrops on the mountainside, which encourages multiple seam mining. The lower seam is removed first, then the next and the next until the mountainside has been converted into a series of level terraces joined by rocky outslopes, like giant steps up a mountainside.

Over much of the site the vegetative cover that holds the soil is completely destroyed. Undisturbed the forest vegetation breaks the impact of the rain. The litter acts as a blotter, absorbing the water and allowing it to percolate slowly down through the soil until it reaches deeper water tables that slowly feed the streams and springs that arise up in the heads of the hollows. In summer a good deal of the water is utilized and transpired by the trees, reducing the amount

that feeds into the streams. The litter layer also slows down the leaching and weathering process, and the nutrients released by the weathering process are taken up by the trees and utilized and stored in leaves, twigs, bark and trunk. Part is returned to the litter in form of leaf fall to be recycled again.

Once the forest cover is removed and the area torn up by bulldozers, the natural cycle evolved over long periods of time is destroyed. Root systems that would hold the soil even after the trees are cut are torn away, eliminating the only real anchor of the soil to the slope. Water that once slowly fed into the soil now rushes down slope. Great quantities of water that would have been taken up by the trees and lost to the atmosphere are added to the amount of runoff. Nutrients that once were slowly leached and recycled are now subject to rapid weathering and chemical action. Elements that are necessary in small amounts, become toxic to plants when released in great amounts. Carried away in high concentrations by water coming off the stripped slopes, these elements reduce water quality down stream. While the amount of leaching of toxic materials decreases rapidly after mining operations the half life of toxic spoil materials in the mountains of West Virginia and Kentucky is 125 years for sulphur, 100+ years for magnesium and 1000+ years for aluminum.

Strip mining increases the natural instability of the slopes many fold. The rocks that make up the matrix of the mountains are relatively stable and protected from excessive weathering by the mantle of soil

covering them. They are compressed and little of their total volume is subject to weathering. But when the rocky material is bulldozed and blasted away from the underlying coal and pushed over the slope, the volume of the material is increased by over one-third. Massive blocks of rock are broken into pieces. The surface area of the material is increased enormously, exposed to air and water, and thus subject to rapid weathering.

The mixture of soil and rock that makes up an overburden that may be 25 or more feet deep is often so deposited that the outslope is steeper than the original slopes. Loose, highly pervious to water, with the minimal amount of overburden at the bottom of the slope and the bulk of the weight on the spoil bench, the outslope is subject to slippage and mass movement. Natural geological forces and gravity that combine to cause the inherent instability on the undisturbed slopes act with an even greater force on the loosened material. The whole mountain side then moves down to the valley.

Heavy rains hammering on the outslopes become runoff that makes its own channels in the spoils. The channels grow into gullies even on revegetated slopes. Water rushing down the gullies carries sediment to streams. The erosive force of water and slippage carries off tons of silt down slope.

In one area of West Virginia, the Coal River watershed, an estimated 19,700 tons of sediment per year are carried away by the waterways. Sediment yield from spoil banks may run as high as 1000 times the amount that

comes from undisturbed forested slopes, and the erosion rate is five to ten times as much.

In some watersheds the situation becomes critical. The Coal River watershed, comprising nearly all of Boone, one third of Raleigh and a portion of Kanawha is one of the most threatened environments in West Virginia. Strip mining has disrupted drainage patterns, reduced water retention, reduced depth of stream channels, increased peak runoff, created extensive land instability with erosion, and resulted in siltation of streams with its destruction of aquatic life. All of this combined has increased the flood potential and flood damage in the region. Indeed the Stanford Institute Report on strip mining in West Virginia done for the West Virginia Legislature, questions "whether granting of new permits in the area is consistent with the achievement of satisfactory environmental conditions and for the achievement of desirable postmining uses of the land."

The strip mining industry argues that reclamation is possible in the southern mountains and points to examples of its success. But are these examples really reclamation and are they successful?

Reclamation, according to Websters International Dictionary, is "the act, or process, of restoring to cultivation or use." In the southern mountains it is very obvious to anyone who views the strip mining reclamation objectively that the land is not being restored to cultivation or use. No attempt is made, indeed it is impossible, to put the excavated material back.

It is impossible to reestablish any semblance of previous ecological conditions. It is impossible to restore most of the land to any form of economic use. What the strip mining industry is doing, as the Stanford Report indicates, is equating revegetation with reclamation, which are two different things entirely. Forest vegetation is not being restored and the attempts at revegetation are only partially successful. What the area was before and what it becomes is a study in contrasts.

The southern mountains of West Virginia were once covered with one of the finest stands of hardwood forests in the world. The magnificent stands are gone. But in spite of past and present abuses, the slopes still grow fine timber.

West Virginia ranks as one of the leading Appalachian hardwood producing states of the nation. The growth potential of the cove-hardwood forest types has no equal. The organic layer in the north and east-facing slopes is very rich in the necessary nutrients and possess the moisture necessary to provide ideal sites for such important hardwood species as black walnut, yellow poplar, white ash, northern red oak, basswood and others. Although many of these sites have suffered from poor management and fire, they are still capable of growing superb timber today.

Coal stripping completely destroys the present stands of timber and so disrupts the environment that it is impossible for any forest

regrowth in the foreseeable future. The rich sites are either destroyed directly by stripping or else they receive the brunt of the overburden and siltation from the stripping at the higher elevations. The organic layer is removed and buried, and materials that once stayed in place erode and add to siltation of streams.

Timber, unlike coal, is a renewable resource. Once the coal is removed it is gone. But if the sites are not completely destroyed as they are in stripping, the forest is self-renewable. Practically all of the West Virginia forest land has either replenished itself either by seeds or by sprouting. Much of the region was logged over by high-grading practices during the late 1800s and early 1900s. Following this destructive logging, wildfires burned over the residual stands. In spite of these abuses the forest came back. However strip mining as now conducted so destroys the sites that they will be unproductive of our major renewable resource. It will take hundreds of years for any kind of forest growth to return to the strip mined slopes. And one can question whether anything comparable to the Appalachian hardwoods will ever return.

While we are sacrificing the rich timber lands of Appalachia to meet an energy crisis (yet it is a known fact that most of the coal of the southern mountains is exported to foreign steel industries) the nation is becoming concerned about a growing timber crisis. The U.S. Forest Service estimates that timber demands will increase by 70 percent by the year 2000. At present level of forest management, the timber supply will be inadequate and prices will rise substantially.

Most of the increased production will have to come from eastern forest lands, the finest of which are the rich cove forests of Central Appalachia now being buried under strip mine overburden.

In place of Appalachian hardwood, the strip mining industry gives us grass. Not top quality grass, but species that are capable of at least short term growth on environmentally severe sites: weeping lovegrass, Kentucky 31 fesque, serecia lespedeza and black locust, all of no importance as forage or wildlife cover.

This is not meant to deride the use of grass on strip ming reclamation. On level to moderate slopes the use of grass is a natural way to restore the area because grass is a successional stage back to forest. But unless care is taken to replace sufficient topsoil and to cover toxic materials the revegetation will not last. Even if the toxic materials are covered, it is not guaranteed that the elements will not come to the surface and inhibit the growth of plants.

In the southern mountains the demise of the vegetation is almost assured. The nature of the spoil is critical and in the southern mountains the long out-slopes are largely rock material with no topsoil. Such material is impossible to cover. By hydroseeding and including a heavy application of fertilizer, the strip mining industry achieves the greening of West Virginia for a year or so, just long enough to satisfy the bond requirements. But then what? Infrared photography indicates that the revegetation of Bolt Mountain did not

result in a healthy stand of grass. Information suggests that the complete failure of the plantings is not far off.

In spite of reclamation efforts, grass planting is successful only in places. The success of revegetation is related to aspect of the slope as well as the nature of the overburden. South slopes are especially hard to revegetate due to the extremes of high surface temperatures and lack of moisture. And on no slopes can grass stabilize the spoils. They will be subject to erosion and slippage for a number of years to come.

Fertilization is an integral part of revegetation, especially the application of nitrogen and potassium. However the leaching of the fertilizer from the spoils can return the site to a nutrient poor condition and have an adverse effect on the survival of vegetation. Who is to be responsible for the maintenance and refertilization of the revegetated slopes once the area is abandoned?

Further, the life span of the vegetation used is short. Unless the industry continues treatment to control acidity and maintain nutrient level, the grass may persist only two to three years to satisfy the requirements of the bonds. Even under management, the life span of lovegrass is only two to three years; fesque, three to four; and lespedeza, three to five. After this time the vegetation will decline, reclamation will be reversed, and new orphaned lands will result.

The strip mining industry has yet to prove that reclamation can be successful in the southern mountains. One, two, even 10 years is not long enough to demonstrate success.

Therefore, I ask the committee to reconsider imposing some slope limitation, if not 15° then certainly 22°, a limitation that would protect much of our southern mountains. To set such a limitation will admittedly have some temporary economic effect on the region. The Council on Environmental Quality states that the heart of Appalachia that lies between Ashland, Ohio and Knoxville, Tennessee would be greviously hurt economically if a 15° limitation is imposed. That is a short term view. To permit the continued destruction of that heart of the Appalachians will greviously hurt it both economically and ecologically in a permanent way. To permit strip mining on the steep slopes will turn the southern mountains into a devastated, uninhabitable, economically ruined region. Within 10 to 20 years the very question of economic hurt that bothers the CEQ now will become a permanent major problem in that region.

Strip mining is only a major temporary industry in the region. It has become so because it is much cheaper to strip the mountains for coal than it is to deep mine for coal. Once this cream is skimmed, the remaining coal reserves of well over 90 percent will have to be deep mined. But to skim this cream, to maintain a very temporary economic situation, are we willing to destroy the potential of the region for the future? Do we want to turn over to the next generation

a wasted land? Are we willing to sacrifice the heart of America's finest hardwood forest sites that definitely will be needed in the future? Are we willing to sacrifice our watersheds and rivers far downstream for a few years of strip mined coal production? That is the very heavy decision that this Congress has to make this year.

Senator Hansen, I know that you were laboring mightily over there on the floor trying to get an amendment adopted and so I asked Senator Wallop to stand by. Senator Wallop would you come back and respond to congratulations and questions?

Senator Hansen.

Senator HANSEN. Thank you very much, Mr. Chairman, I appreciate your courtesy and I might say, judging by the rather lopsided vote, to be on the losing end I could better have spent my time here. Nevertheless, I do appreciate your courtesy.

I want first, Mr. Chairman, to compliment my distinguished fellow "Wyomingite" for his testimony.

Senator Wallop, what amount of reclamation time is required in Western part of the United States?

Senator WALLOP. Senator Hansen, I heard a statement yesterday say that it was 5 years that they could put it back into full production, and I heard a statement here this afternoon that it was 100 years before we could even consider whether or not we might have been doing it. I know that 5 years, just being a dirt farmer among other things, is not even a good farming cycle. The amount of time of course varies in our State as it will in hundreds of areas from along the Big Horn Mountains, in the fairly benign climate where I live, and the reasonable amount of rainfall, to maybe more than south in the Big Horn Basin where there is scarcely no rainfall at all.

So, there are some people that say that land has never been reclaimed.

Senator HANSEN. I could add that in some areas of the Big Horn Basin, the plant density is about as sparse as any place I have seen. We have got to recognize that there are great variances in the ability of soils to support vegetation. We have seen that through Wyoming. Realistically, we would have to agree with some other witnesses that you can't expect more of certain areas than they presently have.

I hope this bill will be drafted in such a way as to encourage a return of vegetative cover equal to what was found there before any mining took place. Is that the way you understand the concept?

Senator WALLOP. Yes, that would be one of the things. I think that this is one of the reasons why I encourage the administration of enforcement of these things to remain in the State, because it may well be that in certain areas of Wyoming, where literally nothing grows, that basically is clay and desolate soil, that that might be the area in which future investor sites would be beneficial and would not destroy more than was already in production.

Senator HANSEN. Would you comment on the concept of the pending bills, and particularly on the Wyoming bill? You have had considerable experience with the Wyoming bill.

Senator WALLOP. Well, the bonding concept as it appears in S. 425, and I would have to agree with the gentleman yesterday, who said that he didn't know about it, it might cost him 100 years to reclaim something, and I don't either.

We approached it somewhat differently, as I think it has been approached in other States, but our bonding procedures increase as the land under disruption increases, up to a maximum point where they begin to reclaim as they have gone far enough into the mining cycle to start to contour and to fill in whatever their reclamation plan calls

for, and as they complete certain steps in that process, then the bond is released behind them up to a point of, I think, where we end up with 75 percent, with the remaining 25 percent held until the reclamation is declared stable and complete, and then for a period of 5 years after that declaration. I think that that is perhaps a more liveable situation from my standpoint, and yet, certainly we felt that it gave us the handle that we needed to retain it.

Furthermore, we put in on the back side of it, that should it prove not t be stable, that the company could still be sued.

Senator HANSEN. Even though the bond——

Senator WALLOP. The bond had been released.

Senator HANSEN. Is there a distinction between reclamation goals and standards?

Senator WALLOP. I think very definitely. This is one thing that I had hoped to make clear, the reclamation standard, at least the way we conceived of it, and I think the way perhaps it ought to be conceived of, is an engineering principle contouring storage of waste, handling of contaminated water, settling ponds, basins, and all of those things, they can be written pretty specifically, and I think we did.

A reclamation goal would be an agreement between, in our case and other lands, the State and the miner, as to what the finished product was going to be.

In Wyoming, and I am sure in Montana and some of those tremendous pits, fresh water storage may be of more benefit to us than returning it to a prairie life, so that the goal of the reclamation would be whatever the State and the miner agreed upon, as could be the finished product when it was over, whether it was an industrial site for water storage or back to prairie land, or into farmland, or whatever it might be.

Senator HANSEN. In your statement you said, "Let me state here that there is one thing which no one knows or is ever likely to know how to reclaim, and that is the underground water courses and storages which are to some extent mysterious, to some extent unknown, and to any extent irreplaceable." In a semi-arid world, the life blood of our existence is water. What danger do you see to underground water sources in mine activity?

Senator WALLOP. Well, sir, it is less than the danger of contamination which is mentioned, and it is perhaps more prevalent in the eastern mining areas, it is the danger of total interruption which worries me. Coal in our part of the world, is the basic aqua for structure along with the water slides. In many instances people don't know where downhill is, they don't know where that finally goes. We might be interrupting South Dakota's underground water supply, perhaps even further away than that.

But closer to home, we might be interrupting the water supply from which our cultural industry really must rely upon. Rainwater is not sufficient and so frequent that you can rely on impoundments as the sole source of livestock water, or even domestic water.

Senator HANSEN. You were referring perhaps to the checkerboard pattern of land ownership so typical of much of the West when you said "don't, whatever you do, have different rules for your ground and ours." Does the checkerboard pattern of public, private, and State

lands in the West present any difficulties in your judgment, in writing good legislation?

Senator WALLOP. Well, it wouldn't present any difficulty if there is a designated body.

Senator HANSEN. I meant to say present, if I said prevent I misspoke the word.

Senator WALLOP. Well, the thing is, it seems imperative to me that either the State or the Federal Government take charge of this thing and direct it properly. My own feelings are pretty strongly toward leaving it with the State. I can't believe that somebody in Washington might decide, for the benefit of Wyoming, that an industrial site is very useful. As I say, for Sun Dance, when the Union Pacific and the transportation and all the other things go across the States 100, or maybe 200 miles away, I feel strongly that from the State's standpoint, from the public standpoint that lives in Wyoming, from the standpoint of the miner trying to operate underneath it, that there has to be one administrative force with which we are dealing, my preference is the State. My preference also is to see to it that the Federal Government in its guidelines is specific enough that it can make demands upon the State to achieve certain levels.

Senator HANSEN. You have anticipated to some degree my next question. Should any Federal law provide that State requirements exceeding Federal ones be recognized as controlling? I have in mind the situation where a State may, in its wisdom, choose to go beyond what has been laid down as the minimum Federal requirements and would ask its legislature to pass bills that would do an even stricter job in supervising mining. Would you favor a provision in whatever legislation finally comes out of this committee which would allow those States that might choose to go even further than the Federal law goes to impose stricter requirements than those presented by the Federal law?

Senator WALLOP. I would be very excited by the prospects of something like that. It seems to me that a State in the governing and administration of its own territory may have certain futures in mind that perhaps might not be apparent to any administrative bureau in Washington, and I can think of any number of instances where our plans down the road for a given area or a given piece of ground might be entirely different, and in those cases I think definitely the State should be—I honestly think that stricter standards should prevail, whichever it may be, whether it is the Federal level or the State.

Senator HANSEN. Mr. Chairman, just let me observe that I think there is a lot of wisdom in the statement and the comments made by my good friend the Senator from Wyoming.

He spoke earlier about the differences between reclamation goals and reclamation standards. If we imposed reclamation standards, I can foresee the possibility of those standards being restrictive enough to effectively block mining in some areas of the United States. There may be economic pressures to go into those sections of the country where the operation could be a more lucrative or a more profitable one. This would be rather compelling, it seems, when we are talking about about very narrow thin seams of coal. Some tough problems have been discussed by various witnesses here. It is not unreasonable to think that if we had overall Federal standards so demanding and if we insist

as many believe we should, upon achieving as nearly complete a restoration of the original contour as possible, the resurgence of vegetation that would stand the test of time, it would be not unlike that which was there in the first place. I believe it could be entirely possible that we would shut down certain section.

I want to leave it up to each State to decide what may best suit its own particular needs and desires. I don't want to impose standards that could be so restrictive as to shut down some sections of the country. On the other hand, I would certainly not want to have Wyoming or Montana, or any other State, denied the opportunity to spell out what it wants through the action of its own legislature. I think we are going to describe, as indeed your bill does, if it is passed. At least it goes further than some States might.

Senator WALLOP. I think that is true, but I think that again this is the area where already the hazy distinction between reclamation standard and reclamation goal is troublesome. And, the goal, if indeed they were to become specific in Federal legislation, could indeed turn off mining in any State, but a standard would be only one portion of achieving a goal.

In other words, if you were to say you are going to—if you are defining contour or terracing, it might be that terracing or contouring would not be part of the reclamation goal.

They would be defined in this manner, here you are talking slope limitations and that sort of thing, and I think you can be specific here.

What I am trying to distinguish between is the fact that the final product is left to be flexible with, that the reclamation standard can be reasonably specific without turning off in any part of the country because it might not in fact be part of the reclamation planning.

Senator HANSEN. I gather then that you think the bill should be precise in fixing certain reclamation goals?

Senator WALLOP. No, sir, the opposite, the standards would be the ones by which I would like to see it be fairly precise in full with the area in which the State and the miner could achieve the flexibility. In other words, you can't say that everything has to be recontoured to its approximate original state, as Senator Fannin mentioned.

Senator HANSEN. Don't many people want that done?

Senator WALLOP. They may well want it as Senator Fannin pointed out, and they obviously do, in our area those things are no longer possible, and I don't think you can put back a 200-foot hole to its approximate original contour when the area is flat in the first place.

But, when somebody is going to contour, or terrace, or impound, or bury toxic materials, or protect fire-producing things, these things can be fairly specific and these are what I refer to as standards. The end product is the area in which to be flexible. I mean in other parts of the world, Senator, landfill is not inconceivable when you are covering minerals in certain clay pits and gravel pits within range of villages and towns, and could well be reclaimed simply by using them as sanitary landfills in the absence of a hidden gulley or something that may lie over the hill. So, the end product of reclamation is the area in which I see flexibility as being the most important. What you do to achieve it by specifics can be pretty good, I think. For instance, I think that you can't leave a 200-foot hole in the ground with straight sides

on it, whatever happens, even if it fills with water it would be a public danger and nuisance.

Senator HANSEN. You have spelled out your thinking with respect to environmental goals with respect to reclamation goals and reclamation standards. Do you envisage the possibility of Federal legislation containing one or the other, whichever it might be, with sufficient specificity as to eliminate a rather considerable amount of money and activities as we know it now?

Senator WALLOP. I think there is no question that it could be written that rigidly, and it is a constant threat.

On the other hand, if it is so unspecific that it can't be pulled down into a State standard, then we have another problem, too.

Senator HANSEN. Thank you, Mr. Chairman. You have been very patient and I appreciate that.

Senator METCALF. This was most helpful, and of course, Senator Wallop, you have been very helpful, too. I think we are all getting to some sort of an agreement that what is desirable is a basic, uniform minimum regulation as far as the State level is concerned.

But at the same time we are not going to preempt stricter regulations by the respective States.

Senator WALLOP. That is what I would hope, but I was just worried about the sorts of lands that your State has, and my State has where the Federal bill and the domestic bill are so intermingled that you just can't put two different sets of standards on them.

Senator METCALF. Not only the Federal and State land but the Burlington northern land, the Kennecott copper land, on that the checkerboard pattern is so complex that we have to have some cooperation at all levels of government to work out restoration and better mining activities.

Are you satisfied with the present Federal surface protection regulations?

Senator WALLOP. No, I am not, and I am not particularly satisfied with the attitude of certain administrative areas.

Senator METCALF. Do you have a permit system in Wyoming?

Senator WALLOP. We do, we have approached it somewhat differently than it is approached in S. 425 and I think that that is necessary from a State standpoint. In our permits, for a permit for the ground to be mined, we distinguished between a license to mine and a permit to mine; an operator has to have both.

A permit to mining under our law is in fact a license to mine that land to a given reclamation and the license to mine is revocable. The revocable handle that we have on it, and I have heard people say, well, in testimony here, that the permit system ought to be 1 year, 5 years—it doesn't really matter how long it is for as long as you can revoke it. Any amount of time doesn't really strike me as being troublesome as long as the administering authority has the power to terminate it at any time.

Senator METCALF. What about third party suits for enforcement of the law? Several people have referred to it. Probably people testified before the Wyoming Legislature that we won't have adequate or sufficient regulation and the regulatory agency might be derelict in its duty, and there should be a citizen suit, for an injunction, or writ of mandamus.

Senator WALLOP. We did not put that into our law, although I can't see any particular reason—I can't see anything that would prevent a citizen from bringing an action against a State or a company to abide by the laws of that State or the company, or the Federal Government that doesn't really write it in, it almost seems superfluous to us.

Senator METCALF. We have had a long line of cases holding that some organization or some individual doesn't have a standing to sue.

So, there probably should be some way for a third party suit. On the other hand, I can see some objection; we can't have continuous and repetitive litigation.

Senator WALLOP. I agree with that, and we certainly discussed it, and it was our feeling finally that there was nothing to prevent it, at least in the State. Now, whether that is true on a nationwide basis, I couldn't say.

Senator METCALF. In the State of Montana for instance, we have a technique of taxpayer suit to test every bond issue and every tax, and so forth, and of course we don't permit that kind of litigation at the Federal level.

Thank you very much, Senator, for your appearance here, and for coming back and helping us with your knowledge and your experience in putting a pieec of legislation through the Wyoming Legislature. We certainly appreciate your appearance.

Senator WALLOP. Thank you very much.

Again, I would very much like to thank the committee for the courtesy shown to me during this testimony.

Senator METCALF. The next witness is Mr. John Tierney, president of the Association for the Preservation of Catlin Township, Ill.

It looks to me as if somebody has strip mined the reproduction of some of your pictures, they look even worse than they started.

Mr. AULER. I think we are able to supplement that summary with slightly better photographs which we would like to submit to the committee. We do not have the facilities of the Sierra Club.

Mr. TIERNEY. One of our problems, Senator, we don't have the facilities we would like to have since we are a small organization and our resources are so very, very limited.

STATEMENT OF JOHN M. TIERNEY, PRESIDENT, ASSOCIATION FOR THE PRESERVATION OF CATLIN TOWNSHIP, ILL., ACCOMPANIED BY MR. AULER

My name is John Tierney and I am the president of the very newly organized organization, the Association for the Preservation of Catlin Township, of Vermilion County, Ill.

My testimony is going to differ somewhat from the testimony that you previously heard in that it is going to relate to how bill 425 would relate to a specific township in which we are now involved in the proposed strip mining.

I am here on behalf of the people of Catlin Township, Vermilion County, Ill., just south of Danville, Ill., where strip mining originated, and where its scars have been affecting the human spirit for decades.

The people are very much concerned about the Amax Coal Corp.'s planned strip mine which would surround the village of Catlin on

the north, east and west, leaving it virtually an island surrounded by waste and devastation. The initial mine would comprise 7,000 acres. 5,000 acres of this land is some of the most highly productive farmland in the world, exceeding 140 bushels of corn and 50 bushels of soybeans to the acre. Much of the land sought to be purchased has produced 180 bushels of corn to the acre, according to University of Illinois surveys.

Catlin, as most all other communities in Illinois, has a zoning ordinance, intended to protect property values and it includes a 1½-mile radius of the village. Despite the zoning of this area for single family residences only, Amax Coal Corp. during the past year has beeen buying land up to the village limits and has sought to buy more. At a Vermilion County regional planning meeting on January 25, 1973, Mr. Kobler of Amax Coal stated that they intend to mine this land, contrary to zoning. To many people, this would mean coming up to their front or backyards.

The 1970 census showed Catlin Township to have had the greatest percentage of population growth of any township in eastern Illinois.

The mining operation which can be expected to last 20 years or more can only cause a reverse population trend. The quiet surroundings that attracted many people to the area will be replaced by the noise of drag lines operating 24 hours a day, 364 days a year, as well as blasting, heavy equipment, and other disturbances normal to a strip mining operation.

Why should the beauty of our natural resources, such as rows of corn, beans, and wheat, timber and wildlife native to the area be replaced by the sight of towering booms of drag lines, huge trenches, and other equipment incidental to surface mining?

No wonder the people of Catlin and the vicinity feel that the area may turn into a ghost town. Who would want to buy property near a strip mine? Most of the residents work in nearby Danville and move or are transferred on an average of every 7 years. Where are the buyers for property going to be found when these people must sell?

Many homes in the area and near Catlin rely on wells for their water supply. Experts tell us that since the water flows toward the excavation site, the water level will likely fall and our water supply lost. How much is a $30,000 house worth without water? Amax, at is recent propaganda meeting admitted the water table might be destroyed.

Illinois State law does not require stripped land be restored, only reclaimed. There is no comparison between the words "restoration" and "reclamation."

This farmland reclaimed cannot possibly produce the crop yields we now have. Amax proudly showed slides of its ideal reclaimed lands which yield one-half of our present bounty. How can anyone justify the sacrifice of a natural resource that will serve mankind, probably for eternity for a resource that would be used for immediate demand and then gone forever. Surely there are ample deposits of coal elsewhere, the mining of which would not destroy as much of the value of our Nation and our world.

The village of Catlin is over 100 years old and has a population of about 2,500. Our situation has been compared by a local newspaper reporter as the story of "David and Goliath" in modern times. Any small

village such as Catlin is at an unfair advantage against a wealthy corporation such as American Metals Climax, Inc.

How much money can a small town have to pursue legal actions to enforce their zoning laws? The coal company is well aware of their advantage and has not concerned themselves about zoning laws. However, in this instance the citizens are so aroused that many have volunteered to help finance legal action. We will expend our own personal funds to pursue legal action to preserve our town.

In my 11 years as an Internal Revenue Service officer, I have been in contact with many dishonest people. However, this is the first time I have seen a major corporation in pursuit of their business of buying land for mining practice such deceit, lying, and pressuring, even to the point of a land buyer pushing a pen in an old woman's hand to get her to sell her land.

This is a prime example of corporate profit first and the public be damned.

On the back of the next page, there is a map. I have got to say that I couldn't make it in color, because we couldn't reproduce it. I think if you study it, you can see the mining coming right up to the village limits.

Mr. AULER. Senator, I won't burden the record by repetition of my written remarks. I am Robert Auler. I am an attorney practicing law in Champaign, Ill. I represent the not-for-profit corporation the Association for the Preservation of Catlin Township.

Senator, being from Montana, I can only use the analogy that I feel somewhat like being brought in to defend the sheepherders against the railroad, who we ended up shooting it out with.

The reason why we are here is to lend a slightly different flavor to this testimony than what we have heard in the terms of metagons, buildings of this and that and other things. This is the situation which exists in the world right now, literally in our backyard, where a monstrous corporation is going to come in, gobble up the land right next to the backyard, disgorge it without digesting it in any fashion, and leave it.

The reason why we know that this is going to occur is because they have told us so. We have the tapes in our briefcases, if you care to have this substantiated. I do have several quotes, if necessary, from those tapes.

Now sir, we also know that this will occur, because this is the same corporation which began its strip mining operations not over 10 miles away in Danville, Ill., in the very same county. The orphan lands in question here are not orphan lands caused by some predecessor corporation that has ceased to exist. We are talking about the American Metals Climax. They are now part of the same organization that have come back into the county.

Under the present meeting in January, we issued an open challenge. We said, "why don't you, since you have given us 1½ hours' work of demonstration of how beautiful you put things back, why don't you give us a real demonstration on lands which you go into 10 miles away and let us see if we will oppose you on the sporting proposition of how well you reclaim the land in question?"

In reply to that, we received from the vice-president of Amax the following response:

I think we always had good intentions, but the goodness of our intentions are overshadowed by our pocketbook.

Since this is a matter of pocketbook, we ask that the U.S. Congress pass some bill. We are not lobbying for one bill or another bill. We want any bill which will protect the small guy from the monstrous corporation coming in and doing violence to the land. We are talking about an area which is the breadbasket of the world, literally. This is 180 bushels to an acre of corn and in places, the $6.40 soybeans.

Amax has been buying lands under the name of Meadowlark Farms Inc. for years. The reason why we found this is there probably isn't a meadowlark within 100 miles of one of the strip mines. I think the word for that is an euphemism.

With respect to that particular feature, we think that Amax, if they continue at the present farm return, will be making a fantastic return. But to come into a public meeting and tell us that they intend to mine up to the very village limits, we cannot feel that there is nothing but contempt for the existing State legislations and contempt for the existing village zoning regulations.

Evidently, they feel that this is an expense, like paperclips, to be shed in the process of scooping billions of dollars out of the ground. Now according to all these megatons and so forth, we have been hearing about all day, there is an awful lot of coal under Illinois. And, after Catlin there will be another town, and another town, and another town. The question appended to this exhibit, I think the Senator can see, that we are half circled already with the existing announced plan. There is as much coal south of that town as there is north of that town. Are we pretty soon going to end up like Senator Fong's State of Hawaii? Only we won't have the Pacific Ocean around us, we will have Amax strip mines.

With respect to that little town trying to exist and these people that have worked their lives and for those in the metropolis of Danville who have come back in this little town of Catlin and lead a quite life, put money into their houses and then have it evaporate through the decline of property values, it simply is not fair.

The legislation that this Congress passes should be gaged to do several things.

One, and I think this is the only viable thing that we can propose out of everything we have heard today, is to protect the small farmers, the small homeowners, from a lack of truth and pressure in what would be called blockbusting if it were done in areas that were about to go black in large cities, and, the techniques and other pressure used by large corporations.

If there could be some criminal penalty placed in the statute to prevent lack of truth, lack of openness, and dispensing of rumors as the technique for buying land, that would be a good thing.

The other thing is to demand stripped reclamation, whatever the term should be, to put this land back into shape.

We are graced, as Senator Metcalf is, by having Glacier National Park, or as Senator Hansen would be with the Tetons. The closest thing we have to the Tetons is the pile of rubble from the 1940's, and it looks the 1940's in comparison to the rest of the land out there.

Now, I can't bring home the fact that we don't have a word like "Appalachia" that is a catchword phrase, we aren't part of Appalachia. This is a prosperous place in central Illinois.

We want to know that we can continue to live the kind of life which we have developed and our relationship between small towns and farms, which it tenuous at best because of the economics of the big cities.

In the State of Illinois, bonds range from $600 to $1,000 per acre. Considering the vast coal resources of our State, such a sum could be forfeited as easily as the company forfeits paper clips or any other minor office expense.

Another feature of any such legislation should include some access to the courts or to the board for damage to property values to surrounding communities, farms, or for damage to natural resources such as water table and rivers in recreation areas. Any such actions should create a provision whereby any citizen has standing to recover for and on behalf of the general public for damage to public areas, rivers, and the like.

Now, I am speaking with a little bit more personal knowledge of strip mining than some other people. I worked my way through law school driving a stripping truck and a cement fork, and I dropped the dynamite down in the sharp holes. And, I also lived in the house that had the cracked plaster a couple of miles away and I know what it is like to live in a town where there is a fantastic over-emphasis because of the power of the corporation.

Just as this Congress saw fit to give benefit to the small individual employee through its labor legislation policy of collective bargaining, in the same sense this Congress should incorporate into any of its proposed legislation, provisions to guarantee that the little man will have the fair chance to continue living his life, and that he, through losing half the value of his property, will not subsidize these huge corporations.

Thank you.

Senator METCALF. Thank you very much, Mr. Auler.

As a lawyer, do the provisions of S. 425 take care of the problems that you are facing in southern Illinois?

Mr. AULER. Well, this is east-central Illinois, we would like to draw a distinction there. With respect to that, in reading over that bill, I was astonished at how many times it hit our problem directly on the head, measure after measure, particularly those calling for implementation of State plans.

Most of us are pretty conservative out there and we would like to see the State do it if it will, but for some reason our State has always seen fit to respond to the mining interests rather than to the small people who want to have it done the right way.

The only thing that I could suggest, that maybe the litigation is showing to me is that there be some Federal standard given to affected individuals at least to appear before a board of some kind, if not to file Federal claims in the Federal Court. That is only 10 miles away in Danville. It gets a little expensive to keep coming to Washington on what we can raise through bake sales and so forth. That is the best way I can put it, the enforcement looks fine on paper but if

it could be vested with somebody who could find the filings before a Federal action, we would feel a little more comfortable.

Senator METCALF. You are talking about a third party suit now?

Mr. AULER. Yes, sir.

Senator METCALF. If legislation were passed with a requirement for filing of a development plan, a program for restoration and reclamation, adequate bonding and permits, would that take care of your concern?

Mr. AULER. Yes, sir, it would take care of 6 feet of rich black topsoil and restore that. I don't know what you could do to it that would harm it except to bury it under a hundred feet of overburden. If they put that on the top, they could at least grow their crops on it, I am relatively sure from what we know technologically.

Also, the Illinois Legislature at this time, that is on the books, has described that as remedial, all this has had no citizen input.

The only point that anybody has heard on one of these reclamation plans is that the county board of a given county has authority within 30 days of the filing of the plan to send objections to Springfield, no hearings, no witnesses, no nothing. And if the mining department sees fit to take account of those then we are in good shape; if it sees fit to overlook them or to rule against us there appears to be no recourse in the statute.

Senator METCALF. You are talking about water. Your water is ground water there?

Mr. AULER. Yes, sir.

Senator METCALF. How deep is it?

Mr. AULER. About 60 feet.

Mr. TIERNEY. My particular well is over 100 feet deep and all the water in this area drains toward the north, toward the excavation site. The water system is very unusual in the type of aquafires. One person will have a well over 100 feet deep, 105, some are only 60 or 70 where it seems like we are all on different veins of water. As we see very easily that when they opened the big dam 100 feet, that the particular streams lose the pressure of our water and the water would just flow right on the ground right past our well.

In this one particular area where I happen to live, it is a very small area near the village of Catlin, it is called Little Lakes. I don't pick out this place because I happen to live there, but it does serve as an example. There are 46 homes in this particular section and I would say that the average house has a value of $25,000 to $30,000. There are 46 homes and each one is on a well. They are very, very close to McGee Road, which is the extent to which AMAX wants to buy so close, a lot of them are right on McGee Road. My particular house is located four houses from the proposed mine site.

Senator METCALF. How much overburden is there on this coal?

Mr. AULER. Approximately 100 feet for an 8-foot seam of coal.

Senator METCALF. An 8-foot seam?

Mr. AULER. Yes, sir.

Senator METCALF. What kind of coal is this? Is this for utilities?

Mr. AULER. I am glad you asked this, Senator. I might volunteer one thing. This raises the question one further aspect. People talk about conservation of energy but you will see down the road 50 miles west,

they propose to take half of another county. The Illinois Power Co. is proposing to take it and cut it into a lake to cool a 400 megawatt, to double their existing capacity in one powerplant.

Now, if they are going to do that, and still we have to strip east Illinois for coal to meet current energy crises, this is an utter inconsistency how these things can go on. And, there is no agency, no overview given to putting this all together and finding a way to meet the needs.

The justification for the powerplant is, we have to generate in Illinois, the power that we burn in Illinois. They have never said that regarding our corn production. We are more than happy to grow the corn for half the country and to create hogs that everybody eats, but for some reason we have to be parochial with their view toward our power.

I think there should be some consideration given to this sort of a policy and I think S. 425 sets up the kind of an overview agency which could look into these things and say to a coal company, now look, if you propose to mine here why don't you get together with the power company and find out whether you really need to, whether there is going to be any demand for this coal after you tear the place open, and whether in fact atomic power is going to meet the needs of this area.

Anything that could serve as an agency's input—as it is right now, we have no due process, there is no agency, there is no opening that we can wedge into in order to get our views before any kind of a regulatory agency. It is simply you go in, you put your money down and you have a right to mine. You send a plan in to Springfield and if the county board doesn't like it, they can file objections and nobody ever hears what happens to them and suddenly the place gets mined. And, if they can put it back that is great, if they can't, well that is tough luck. That is what we were told in public meetings; they tried to and they have a conscience and all that sort of thing, but there is nothing that really requires them to do it.

They admitted it is economically to their advantage to default on the bonds. They also admitted that out of their 6,700 odd acres that they are currently mining in Illinois or possibly that they were mining in 1969, they are now in default on 1,800 acres, this was Amax alone.

In the next breath the vice president of Amax said that they have the best record of any coal company operating in the State of Illinois. Now, if that is true, this is a horrendous endictment of the Illinois remedial legislation which is not remedial at all.

Incidentally, a mining agency had an initial appropriation of $50,000. Now, I don't know how the Federal Government looks at $50,000, but that isn't very much as far as the State agency funding in Illinois. This is a burden for two or three people to go out as they explained that they actually do, get blindfolded, point to a map, go to a location, throw a rock over their shoulder and count the blades of grass where it hits, and that is how they make their tests as to whether or not there is compliance.

By those standards 1,800 acres in the one company are in default so you can see we have a problem.

Senator METCALF. Yes, indeed, thank you very much.

Your testimony puts into perspective some of the specifics of the piece of legislation as it will affect individuals and local communities all over the Nation. We have been talking about vast coal fields in vast areas, but believe me, all of us are concerned and know about the ranchers, and the farmers, and the small communities all over the United States who have the same problem that you have.

I think you have made a significant contribution to come back and tell us about it.

Mr. AULER. We hope we illustrated a good deal of the people who didn't have the $114 to fly to Washington.

Thank you, Senator.

[The prepared statements of Messrs. Tierney and Auler with attachment follow:]

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

DIRECT TESTIMONY OF JOHN M. TIERNEY

March 15, 1973

I am here on behalf of the people of Catlin Township, Vermilion County, Illinois, just south of Danville, Illinois, where strip mining originated, and where its scars have been affecting the human spirit for decades. The people are very much concerned about the Amax Coal Corporation's planned strip mine which would surround the village of Catlin on the north, east and west, leaving it virtually an island surrounded by waste and devastation. The initial mine would comprise 7,000 acres, 5,000 acres of this land is some of the most highly productive farm land in the world, exceeding 140 bushels of corn and 50 bushels of soybeans to the acre. Much of the land sought to be purchased has produced 180 bushels of corn to the acre, according to University of Illinois surveys.

Catlin, as most all other communities in Illinois, has a zoning ordinance, intended to protect property values and it includes a one and one-half (1 1/2) mile radius of the village. Despite the zoning of this area for single family residences only, Amax Coal Corporation during the past year has been buying land up to the village limits and has sought to buy more. At a Vermilion County Regional Planning meeting on January 25, 1973, Mr. Kobler of Amax Coal stated that they intend to mine this land, contrary to zoning. To many people, this would mean coming up to their front or back yards.

The 1970 census showed Catlin Township to have had the greatest percentage of population growth of any township in eastern Illinois.

The mining operation which can be expected to last 20 years or more can only cause a reverse population trend. The quiet surroundings that

attracted many people to the area will be replaced by the noise of drag lines operating 24 hours a day, 364 days a year, as well as blasting, heavy equipment, and other disturbances normal to a strip mining operation. Why should the beauty of our natural resources, such as rows of corn, beans and wheat, timber and wildlife native to the area be replaced by the sight of towering booms of drag lines, huge trenches and other equipment incidental to surface mining.

No wonder the people of Catlin and the vicinity feel that the area may turn into a ghost town. Who would want to buy property near a strip mine? Most of the residents work in nearby Danville and move or are transferred on an average of every seven years. Where are the buyers for property going to be found when these people must sell?

Many homes in the area and near Catlin rely on wells for their water supply. Experts tell us that since the water flows toward the excavation site, the water level will likely fall and our water supply lost. How much is a $30,000.00 house worth without water? Amax, at its recent propaganda meeting admitted the water table might be destroyed.

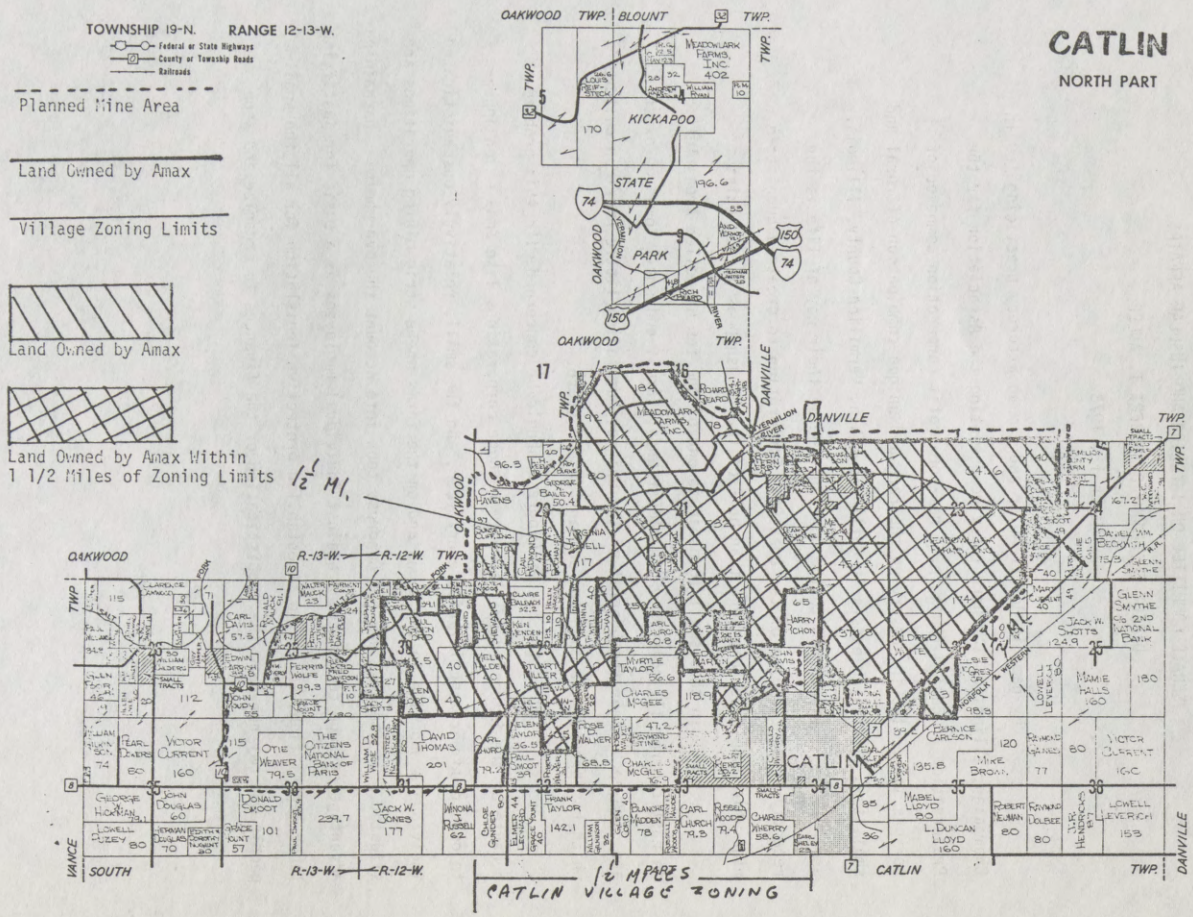
Illinois state law does not require stripped land be restored, only reclaimed. There is no comparison between the words restoration and reclamation.

This farm land reclaimed cannot possibly produce the crop yields we now have. Amax proudly showed slides of its "ideal" reclaimed lands which yield one half of our present bounty. How can anyone justify the sacrifice of a natural resource that will serve mankind, probably for eternity for a resource that would be used for immediate demand and then gone forever. Surely there are ample deposits of coal elsewhere, the mining of which would not destroy as much of the value of our nation and our world.

The village of Catlin is over 100 years old and has a population of about 2,500. Our situation has been compared by a local newspaper reporter as the story of "David and Goliath" in modern times. Any small village such as Catlin is at an unfair advantage against a wealthy corporation such as American Metals Climax Incorporated. How much money can a small town have to pursue legal actions to enforce their zoning laws? The coal company is well aware of their advantage and has not concerned themselves about zoning laws. However, in this instance the citizens are so aroused that many have volunteered to help finance legal action. We will expend our own personal funds to pursue legal action to preserve our town.

In my eleven years as an Internal Revenue Service Officer, I have been in contact with many dishonest people. However, this is the first time I have seen a major corporation in pursuit of their business of buying land for mining, practice such deceit, lying and pressuring even to the point of a land buyer pushing a pen in an old woman's hand to get her to sell her land.

This is a prime example of corporate profit first and the public be damned.


TOWNSHIP 19-N. RANGE 12-13-W.
Federal or State Highways
County or Township Roads
Railroads
Planned Mine Area
Land Owned by Amax
Village Zoning Limits
Land Owned by Amax
Land Owned by Amax Within
1 1/2 Miles of Zoning Limits
1/2 MI.
CATLIN
NORTH PART
OAKWOOD TWP.
BLOUNT TWP.
DANVILLE TWP.
VANCE TWP.
SOUTH
R.-13-W.
R.-12-W.
KICKAPOO
STATE
PARK
CATLIN
1/2 MILES
CATLIN VILLAGE ZONING

1123

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

DIRECT TESTIMONY OF ROBERT I. AULER

March 15, 1973

My name is Robert Auler and I'm an attorney practicing law in Champaign, Illinois. I'm here today representing the Association for the Preservation of Catlin Township, a not-for-profit corporation composed of persons interested in preserving the rare and unique combination of rural and small town life which exists in Catlin Township, Vermilion County, Illinois.

The threat to the continuation of their way of life is the recently announced plan of the Amax Coal Corporation to create a huge strip mine which would consume more than half of the township as it now exists.

In this small township is one of the few unspoiled areas left in east-central Illinois in which timberlands, farms, and small towns co-exist and give each other the benefit of the unique, but fading little American culture which has produced so much for so many in our state.

The United States Congress should be concerned with this problem because of the immense disparity between huge corporations like Amax which appear to gobble up more subsidiaries every year, and the small, relatively unsophisticated individuals who live in the towns and on the farms where strip mining operations are situated. In the same way the Congress took into account the overwhelming bargaining advantage of huge corporations against individual employees as a basis for justifying labor legislation, so should it establish protective legislation for all the small people who may not have the sophistication or the finances to organize and stop

operations of this kind. The village of Catlin has been fortunate in having people who were not afraid of this coal company, and who had organizational talent. There must be hundreds of places in the United States where people are simply intimidated into silence when a huge conglomerate announces that it is about to gobble up the land and then disgorge it relatively undigested.

Current Illinois law, although it is billed as remedial and even "tough" is much weaker than the laws of such states as Kentucky and West Virginia. Our law provides only for reclamation which can include slopes of as much as 15% or up to 30% if the land is to be turned over to forest, recreational, or wildlife use. Moreover, the mine operator does not need to reduce or eliminate the final high wall cut, but can simply submerge it under at least four feet of water. He has to make no attempt to replant until approximately three years after mining has ceased. There is no requirement that the rare and unique central Illinois topsoil be saved and reused. No where in the act is there a requirement that the land be reclaimed for its highest and best use, nor is there any definition as to the goals which should be sought in establishing the ideal reclamation.

For more important, this act received only a $50,000.00 appropriation from the state legislature and it is being enforced in an extremely haphazard fashion. The explanation of one of the mining department investigators, recently, was that testing for compliance was done through blindfolding an official who then pointed to a map. The enforcement officer then went to that location and cast a stone over his shoulder. Wherever the stone landed, there the test was made as to foliage density and grade.

A super important facet in any proper strip mining legislation which could emerge from this Congress would be citizen input. Obviously the problems of central Illinois are different from those of Wyoming. We don't have any pronghorn

antelopes to protect, and they don't have to worry about 180 bushels of corn to the acre. Nevertheless, if mining operations were required to appear before a board for licensing, all the peculiar features of each area could be taken into account. This would encourage bargaining with the aroused opponents of the mines, and possibly resolving differences in such a way that mine operators would agree to make different restoration attempts in different parts of the country. Obviously it is more important to consider esthetics when you're mining in a population center than when you are mining in the middle of a desert. Moreover, any board should be authorized to hold hearings in the locality effected rather than requiring citizens to transport themselves to Washington, D.C. to petition their government for relief. Finally, any strip mining should be controlled by the possibility of heavy fines and the necessity of heavy bonds being posted. In the State of Illinois, bonds range from $600 to $1,000 per acre. Considering the vast coal resources of our state, such a sum could be forfeited as easily as the company forfeits paper clips or any other minor office expense.

Another feature of any such legislation should include some access to the courts or to the board for damage to property values to surrounding communities, farms, or for damage to natural resources such as water table and rivers in recreation areas. Any such actions should create a provision whereby any citizen has standing to recover for and on behalf of the general public for damage to public areas, rivers, and the like.

There are many other features which should be incorporated in this legislation, but the most important is citizen input and a definition by proponents and opponents of strip mines of what is technologically possible and what is environmentally desirable regarding reclamation.

If that is done, the problem may not be solved, but will certainly be improved. We cannot allow a situation to exist wherein the residents of places like Catlin must organize virtual vigilante committees to try to protect their property and way of life.

VERMILION COUNTY RERIONAL PLANNING COMMISSION,
Danville, Ill., March 7, 1973.

Hon. HENRY M. JACKSON,
Chairman, U.S. Senate Committee on Interior and Insular Affairs, Washington, D.C.

DEAR SENATOR JACKSON AND COMMITTEE MEMBERS: This is to advise you that the County Board of Vermilion County and the Vermilion County Regional Planning Commission have for several months been concerned with the proposal by the AMAX Coal Company to strip mine 4,000–6,000 acres of land in Catlin Township in Vermilion County, Illinois.

The County Board and the Planning Commission have gone on record stating this concern which is evidenced by the attached County Board Resolution (Exhibit 1) which authorized the Planning Commission staff to respond by providing research and technical assistance to the local units of government which would be affected.

The Planning Commission has been involved in the following ways:

Developed basic research into existing and proposed Federal, State and local laws and regulations concerning strip mining.

Requested the Vermilion County Soil and Water Conservation District to prepare a land use study of the proposed mining area.

Provided resource and planning information to the Soil and Water Conservation District, Catlin Township and the Village of Catlin.

Accepted the land use study prepared by the Vermilion County Soil and Water Conservation District, agreeing in principle that the present agricultural land use should continue.

Accepted Planning Commission staff recommendations concerning proposed courses of action to be taken by the Planning Commission (Exhibit 2).

Held special public information meeting on subject of strip mining in Vermilion County at which representatives of Mining Company and the Illinois Department of Mines and Minerals responded to citizen questions concerning the proposal and current regulations. (Attended by approximately 150 citizens.) See Exhibit 3 for summary of meeting.

Working toward establishing a Catlin Township Zoning Commission which would have the responsibility of preparing a Township Zoning Ordinance.

Responded to request by Village of Catlin to provide technical assistance in reviewing and updating their current zoning ordinance.

Provided information on request to citizens and local officials.

Vermilion County presently does not have land use controls which would prevent or regulate a strip mine operation. The Planning Commission is developing a Comprehensive Guide for Future Development which is based on a thorough analysis of our natural and physical resources with the intent of protecting our resources for the highest and best use for the future. (See Exhibit 4).

We feel that agricultural land should not be sacrificed to obtain a harvest of minerals when the technical knowledge exists to protect and return this agricultural resource.

Sincerely,

GLEN EICHER, *Executive Director.*

[The exhibits attached to this letter were retained in the committee file.]

Senator METCALF. Dr. Ahmad.

STATEMENT OF PROF. MOID U. AHMAD, OHIO UNIVERSITY DEPARTMENT OF GEOLOGY, ATHENS, OHIO

Dr. AHMAD. I am an associate professor of geology at Ohio University.

Senator METCALF. As a Ph. D.?

Dr. AHMAD. And a geophysicist from the University of London. I was working for the United Nations before I came here.

We have been studying the strip mines for the last 4 years or more.

Recently we have been studying the satellite pictures taken at the elevation of 500 miles. I would like to present this picture to you.

Senator METCALF. Senator Moss, who has left this committee as chairman of the Minerals Subcommittee to become chairman of the Space Committee for the Senate, will be very much interested in your use of the satellite pictures.

Dr. AHMAD. Figure 1 is a shot of southeastern Ohio taken on August 21, 1972, at an elevation of 500 miles and covers an area of 10,000 square miles. Figure 2 shows the reclaimed and unreclaimed strip land. Our study indicates that ERTS–A imagery can be effectively used to map the strip mines and show that the hydrological and soil characteristics are remarkably different from the surrounding land.

At present maps are not available of the disturbed mine land. It is estimated that strip mining has disturbed about 4 million acres but the actual affected area may be much higher.

If the attached satellite picture is typical for the United States, I would not hesitate to state that 90 percent of the strip land has not been reclaimed so far.

Reclamation cost in European countries, especially Great Britain, averages about $4,000 per acre. It would, therefore, be necessary to spend $14,400 million in order to reclaim the orphan land. At present there is a school of thought that maintains that reclamation (covering the surface with grass and trees) would solve all our problems caused by strip mining.

We know, of course, that if the land is not reclaimed, it would produce acid, siltation, erosion, landslides and subsidence.

It is this process of reclamation and its aftermath that I want to discuss in detail which, Mr. Chairman, deserves your special consideration.

Mine drainage is one of the most serious problems of strip and deep mining. Acid is formed when pyrite is oxidized in the presence of oxygen and moisture. This chemical reaction produces sulfuric acid which attacks the rocks and produces salts of iron and other toxic elements.

The pyrite is found in association with coal, clay, shale, and other rocks adjacent to and including the coal being mined. Only 25 percent of coal has a sulfur content less than 2 percent.

The sulfur content is related to pyrite content, the higher the sulfur content the more the pyrite content. Even the rocks overlying the coal have pyrite. The different layers of rocks have different percentages of pyrite. The rocks, especially black shales, may contain as much as 14 percent pyrite. The thickness is variable.

In general, it has been observed if these rocks are not disturbed or gouged, no acid water is produced because the pyrite particles remain locked in consolidated rocks.

Strip mining pulverizes the rocks overlying the coal seams and releases large quantities of pyrite available for oxidation. Spoil banks are more permeable to water and air.

Therefore, acid production is the rule rather than exception. However, in some regions no acid drainage is observed. These are regions

where overlying rocks have sufficient limestone to neutralize the acid, but other harmful toxic elements are still produced. Mine drainage is divided into four classes as shown on the table on page 3 of my testimony. In the past, complete analysis of mine drainage has not been reported, only the few diagnostic tests were conducted as mentioned in table I.

In San Juan Mountain, Colo., Miller reported the typical analysis of mine drainage from one mine in the San Juan Mountains of Colorado which is given in table II. It can be seen from the table that the major constituents of the drainage are iron, aluminum, zinc, copper, and sulfate ions.

Generally, mine drainage originates in an abandoned strip mine from which the runoff joins and pollutes mountain streams. The observation is that from the point at which the mine drainage enters the streams to a point further down the stream, no aquatic life exists. The nonexistence of aquatic life is a result of the high acidity of mine drainage and the metal ion concentration.

On page 4 of my testimony you will also see an analysis showing the mine drainage from the reclaimed Sheban Mine.

Curtis studied chemical quality of water before and after reclamation in six small watersheds in Breathitt County, Ky., for 4 years. His study indicates that surface mining for coal may result in chemical pollution of the streams even in areas where acid is no problem.

Among the elements showing greatest increases following mining are sulfate, calcium, and magnesium. Aluminum and manganese have increased, as have iron and zinc. Some elements continue to increase at least up to 2 years after mining. Others peak rather quickly after the land disturbance and may soon return to premining level.

Mercury is mostly concentrated in iron sulfide in the coal deposits. Cinnabar, the sulfide is the most important and contains 86 percent mercury by weight.

Hunter has reported 100,000 to 260,000 p.p.b. average 120,000 p.p.b. in the ashes of coal from West Virginia. Recently Illinois State Geological Survey has reported significant content of mercury in coal from Arizona, Colorado, Montana, Ohio, Pennsylvania, and Utah, from 0.02 to 0.28 p.m.

According to some authorities appreciable amounts of mercury can go into solution when ground water reacts with cinnabar. Recent reports indicate high mercury level in ponds and streams. Public Health Service recommends that mercury in drinking water be limited to 5 p.p.b.

A school of thought has given the following definition to reclamation: "reclamation" means the process of restoring a mined area affected by a mining operation to its original or other similarly appropriate condition, considering part and possible future uses of the area and the surrounding topography, and taking into account environmental, economic, and social conditions.

In order to achieve this objective, topsoil which is only a few inches thick in most of the mining districts and in some practically absent, is segregated and is put back on the mined land.

It must be mentioned that it is a better method than putting no topsoil because the development of topsoil takes thousands of years and has a definite relationship with subsoil layers.

This segregated topsoil when placed on the spoil bank would tend to lose its nutrient content and water much more than if it had not been disturbed and is only useful for growing grasses and legumes and not for deep rooted plants.

In Pennsylvania this practice has produced good grass cover. However, very little information is available about the productivity of this land. In Ohio this practice has started since 1972, therefore the results are not known yet.

European countries have followed this practice for a long time. While conditions and requirements will naturally vary considerably from site to site and will need to be reviewed and assessed each year, the summary on page 6 of a typical restoration program may be of interest.

Senator METCALF. Did you hear Dr. Curry testify earlier today?

Dr. AHMAD. Yes; and we reached similar conclusions, but we are trying to propose this rather independently. I didn't known Dr. Curry before I came here. So, our conclusions are about the same as what Dr. Curry suggested this morning or this afternoon.

Senator METCALF. It seems to me that Dr. Curry was saying that maybe we could put the topsoil back in Appalachia or Central United States, but the previous witness said that there was 6 feet of fertile soil there in central Illinois. But we have a couple of inches out there in eastern Montana and the disturbance of that soil he said couldn't be reclaimed in 100 years.

Dr. AHMAD. I tend to agree with him that what he said is also true to some extent in areas of Appalachia also. Then of course in order to settle the arguments EPA has recently completed two successful reclamation demonstration projects, one was done in Elkins Mine in West Virginia, and the other was in Moraine State Park in Pennsylvania. And, in both reclamation projects they have spent on the order of $2,000 an acre.

Hill reported the following conclusion:

> The Elkins Mine Drainage Demonstration Project has produced both encouraging and discouraging results, the reclamation and revegetation of surface mines and refuse piles have resulted in a decrease in the pollution load from that source. Not all these changes occur overnight and several years will be required before all the residual pollutants are leached from the reclaimed spoil and the water approaches a stable condition.

This reclamation was completed in the spring of 1968. So far there is no material change in acid mine drainage in this watershed.

During the reclamation, 651 acres of surface mines were reclaimed, 709 acres revegetated, 55 masonry seals constructed and 41 clay seals installed. The average overall surface mine reclamation cost was $2,236 per acre.

Foreman reported the following conclusion:

> Before and after data for the strip mine reclamation projects indicate a minor net decrease in the average discharge flow rates from 142 to 136 gallons per minute, an overall reduction in acidity from 50 to 22 pounds per day, a 56-percent reduction, and insignificant change in iron from 3 to 4 pounds per day. The strip mine reclamation costs was $672,208 for 462 acres. These costs ranged from a low of $420 to a high of $2,700 per acre, for an average of $1,455 per acre.

Several experts have stated that if the pyritic material is deeply buried, successful vegetation cover can be obtained and harmful leachate would not be produced. Smith reported that if pulverized

pyrite was buried under 3 inches, slightly acid soil in a miniature lysimeter, its rate of oxidation and acid formation was 10 to 25 percent as great as for pyrite within one-half inch of the surface.

A similar trend should occur under field conditions. In another experiment, he buried pyrite under 4 feet of normal, loamy soil, essentially no acidity nor iron drained out of the bottom during 24 weeks with pulverized pyrite buried at 6 feet depths.

In a recent study Petterson has successfully reclaimed mine spoils in southern Illinois with digested sewage sludge. Test plots on a barren acidic coal mine spoil showed that application of 200 to 500 dry tons per acre would result in a permanent vigorous grass cover while subsurface water quality was upgraded.

Improvement in leachate water quality and in the spoil material itself were confirmed by laboratory column studies in which sludge treated and untreated acidic spoil material was leached daily for 110 days.

In a study by U.S. Geological Survey, it is reported that a spoil bank in which pyritic material was deeply buried, did not produce acid water for 2 years. However, later observations showed that it supplied acid water.

This debate about the depth of burial of pyritic material would continue for a long time. The fact is that if the pyritic material would receive oxygen and moisture, it would produce acid water and toxic discharge. Oxidation has been reported at a depth of 600 feet in Arizona.

My conclusions on this are as follows:

Strip mining disturbs the natural surface and ground water flow system and degrades the water quality.

Generally, coal mining districts have a toxic overburden with only a few inches of top soil. It is possible to obtain good grass cover but long term productivity of this land is limited. These districts would eventually produce acid and toxic discharge for a long time.

There are areas in coal mining districts where it is possible to get coal by strip mining techniques and reclaim the land without seriously affecting the ground water quality.

In Montana, Wyoming, and North Dakota, there are huge deposits of low sulfur coal seams up to 200 feet thick. Generally overburden is very high in sodium content but is alkaline, and there are serious revegetation problems.

Large scale stripping would affect water levels over hundreds of square miles as it has occurred in Germany.

They are finding that the salty water is contaminating the upper bracket. This is most likely to happen in Montana, Wyoming, and North Dakota.

The cost of proper reclamation is very high if we do a proper reclamation, on the order of $4,000 per acre.

Our country is now resorting to a large scale strip mining operation. I hope and pray that Congress which inherited a bill of $14 billion in order to reclaim 4 million acres of strip land, would act with courage and foresight. If this Congress does not act now, then the costs for future Congresses will be significantly higher.

Senator METCALF. Thank you very much, Dr. Ahmad.

You talked about strip mining in Appalachia area, and how there is a leaching of acids and various chemicals, many of them poisons, into the water table and into the streams and so forth.

Now, out in Montana and Wyoming, some of the western area, the primary water level is the level of such rivers as the Yellowstone and the Missouri, would there still be deterioration of water quality in areas such as that?

Dr. AHMAD. Yes. I put in a report from a man who has worked in Montana, and two reports have come out and they have studied the water from the strip mine ponds and the water quality is bad there; it contains a lot of soil, it is on the order of 4,000 parts per million. It is not good water, and I have got a report just now and I could show you, sir, that whatever data we have for it at present in the impoundments in Montana and those areas, I am saying generally, you know this is sort of a generalized picture. There may be a place where you could get good quality water, but by and large the good water would be salty and would have a high total result solids.

Senator METCALF. I gather as you discussed the presence of oxidization of pyrites and so forth, even with strict reclamation procedures, we would still have a deterioration of water quality in the surface mined areas?

Dr. AHMAD. One of our studies has been made, one was made in Athens and one in Pennsylvania, they have done the reclamation and even after 2 or 3 years the acid water is still coming off from those strip lands and at Marina State Park, actually the water quality is deteriorating every year.

Senator METCALF. Would it make any difference if they were the low sulfur coal that we have in the West, as against relatively high sulfur coal that was testified about in central Illinois or Appalachia?

Dr. AHMAD. I would very much like, if we have to do the strip mining at all, that we do it in the West, but it doesn't solve the problem for the people.

Senator METCALF. The people of Catlin would like to have the strip mining in Montana, and of course the people of Montana would like to have the strip mining done in Arizona. But, what I was asking you about was this acid mine drainage and leaching of water. Orphan mines, for example, are still draining acids and poisons into our streams from Kentucky and West Virginia from mining that went on 40 or 50 years ago. But does it make a difference when it is low sulfur coal or when it is high sulfur coal?

Dr. AHMAD. No, sir, it all depends on what type of overburden is above the coal seams. If the coal seams overburden is toxic, it would contain pyrite, so it is the overburden that decides whether the acid water is going to come or not. It has nothing to do with the low sulfur or the high sulfur.

What I said about if we have to go to Montana, it is not because we are trying to shift the problem to Montana but because we know that the problems there will be even more serious than the problems we have for it here.

Senator METCALF. I am still not sure about ground water and leaching of water, of acids and so forth into water, and pollution and degradation of water below the drainage level. When we go down say

200 or 300 feet below the ordinary drainage level into such a river as the Yellowstone, is there a leaching of poison and acid in overburden into that ground water level that deteriorates and degrades the water?

Dr. AHMAD. In cases in Pennsylvania it has been reported that the stripping of the shallow surface has affected the water quality, the lower aquafires on account of the large number of oil and gas wells in the lower aquafire and that has contaminated and we have documents about it. But, if we could take the coal out for the drainage in deep mines then the problem is not so bad, then we can get the coal and the problem of water is not so bad.

I have got a map, sir, on which I could show you the streams polluted, and you probably have heard about it, 18,000 miles of streams have been polluted in Appalachia; and EPA and a lot of people have been spending millions of dollars, probably a billion dollars has been spent so far for the last 50 years and the problem has not been solved. This problem will be left for a bunch of children and grandchildren and this problem will continue.

Senator METCALF. Thank you very much for your testimony, Doctor. I thank you for being so patient in waiting this long in the afternoon while the committee heard other witnesses.

I am impressed with your testimony and the statement will be included in the record.

Dr. AHMAD. I am sorry that I was not able to give a constructive lecture about it, but there are solutions available for it if the Congress is interested. This country has got the know-how; if they can send a man to the Moon they can certainly solve this problem also.

Senator METCALF. I think perhaps we can keep the lights turned on, even if we don't poison the water.

Dr. AHMAD. Thank you very much.

[The complete statement of Dr. Ahmad follows:]

TESTIMONY BEFORE THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS OF THE UNITED STATES SENATE

March 15, 1973

Prof. Moid U. Ahmad
Ohio University
Department of Geology
Athens, Ohio 45701

STRIP MINING

Magnitude of Strip Mining

NASA's Earth Resources satellite (ERTS-A) is sending good quality pictures. Fig. 1 is a shot of southeastern Ohio taken on Aug. 21, 1972, at an elevation of 500 miles and covers an area of 10,000 square miles. Fig. 2 shows the reclaimed and unreclaimed strip land. Our study (1) indicates that ERTS-A imagry can be effectively used to map the strip mines and show that the hydrological and soil characteristics are remarkably different from the surrounding land.

At present maps are not available of the disturbed mined land. It is estimated that strip mining has disturbed about 4 million acres but the actual affected area may be much higher. If the attached satellite picture is typical for the U.S.A., I would not hesitate to state that ninety percent of the strip land has not been reclaimed so far. Reclamation cost in European Countries, especially G.B., averages about 4000 dollars per acre.(2) It would therefore be necessary to spend 14,400 million dollars in order to reclaim the orphan land. At present there is a school of thought that maintains that reclamation (covering the surface with grass and trees) would solve all our problems caused by strip mining.

We know of course that if the land is not reclaimed, it would produce acid, siltation, erosion, landslides and subsidence.

It is this process of reclamation and its aftermath that I want to discuss in detail which Mr. Chairman deserves your special consideration.

MINE DRAINAGE

Mine drainage is one of the most serious problems of strip and deep mining. Acid is formed when pyrite is oxidized in the presence of oxygen and moisture. This chemical reaction produces sulfuric acid which attacks the rocks and produces salts of iron and other toxic elements. The pyrite is found in association with coal, clay, shale and other rocks adjacent to and including the coal being mined. Only 25 percent of coal has a sulfur content less than 2 percent. The sulfur content is related to pyrite content, the higher the sulfur content the more the pyrite content. Even the rocks overlying the coal have pyrite. The different layers of rocks have different percentages of pyrite. The rocks, especially black shales, may contain as much as 14% pyrite. The thickness is variable. In general, it has been observed if these rocks are not disturbed or gouged, no acid water is produced because the pyrite particles remain locked in consolidated rocks.

Strip mining pulverizes the rocks overlying the coal seams and releases large quantity of pyrite available for oxidation. Spoil banks are more permeable to water and air. Therefore acid production is the rule rather an exception. However, in some regions no acid drainage is observed. These are regions where overlying rocks have sufficient limestone to neutralize the acid, but other harmful toxic element are still produced. Mine drainage is divided into four classes [3] as shown in the following table. In the past, complete analysis of mine drainage has not been reported, only the few diagnostic tests were conducted as mentioned in Table I.

Table I MINE DRAINAGE CLASSES

	Class 1 Acid Discharges	Class 2 Partially Oxidized and/or Neutralized	Class 3 Oxidized and Neutralized and/or Alkaline	Class 4 Neutralized and Not Oxidized
pH	2 - 4.5	3.5 - 6.6	6.5 - 8.5	6.5 - 8.5
Acidity, Mg/l ($CaCO_3$)	1,000 - 15,000	0 - 1,000	0	0
Ferrous Iron, Mg/l	500 - 10,000	0 - 500	0	50 - 1,000
Ferric Iron, Mg/l	0	0 - 1,000	0	0
Aluminum, Mg/l	0 - 2,000	0 - 20	0	0
Sulfate, Mg/l	1,000 - 20,000	500 - 10,000	500 - 10,000	500 - 10,000

Cost of cleaning Class I water by yellow boy capacity 240,000 per day, $1.00 for 1,000 gallons.

DRINKING WATER STANDARDS

	Upper Limit
Pb	0.1
Fluoride	1.5
Arsenic	0.05
Se	0.05
Chromium	0.05
Cu	3.0
Iron & Manganese	0.3
Mg	125
Zn	15
Cl	250
SO_4	250
Phenol	0.001
pH	8.0

Total solids desirable	500
Total solids permitted	1,000

TOXIC ELEMENTS

San Juan Mountain Colorado: Miller [4] reported the typical analysis of mine drainage from one mine in the San Juan Mountains of Colorado is given in Table II. It can be seen from the table that the major constituents of the drainage are iron (Fe); aluminum (Al), Zinc (Zn) Copper (Cu) and sulfate ions.

Table II

Analysis of Mine Drainage from San Juan Mountains, Colorado.

Concentration in parts per million

pH	As	Cd	Cu	Fe	pb	Mn	Ni	Al	Zn	Sulfate
2.6	0.9	0.9	17.5	637	0.9	9.0	0.5	238	22.8	3310

Generally, mine drainage originates in an abandoned strip mine from which the run off joins and pollutes mountain streams. The observation is that from the point at which the mine drainage enters the streams to a point further down the stream, no aquatic life exists. The non-existence of aquatic life is a result of the high acidity of mine drainage and the metal ion concentration.

Sheban Mine Ohio: The following analysis is reported by Ohio Department of Health:

Analysis of Mine Drainage from the reclaimed Sheban Mine 6-10-71

concentration in parts per million.

Cd	Cu	Fe	Mn	Ni	Zn	Al	Ca	Mg	Na	K	Sulphate	Cl	F
.025	.08	142	135	2.5	2.6	100	520	550	12	4	2167	15	11

Watersheds in Kentucky

Curtis [5] studied chemical quality of water before and after reclamation in six small watersheds in Breathitt County, Kentucky for four years. His study indicates that surface mining for coal may result in chemical pollution of the streams even in areas where acid is no problem. Among the elements showing

greatest increases following mining are sulfate, calcium, and magnesium. Aluminum and maganese have increased as have iron and zinc. Some elements continue to increase at least up to 2 years after mining. Others peak rather quickly after the land disturbance and may soon return to premining level.

MERCURY AND ROCKS

Mercury and Rocks: Mercury is mostly concentrated in iron sulfide (pyrite) in the coal deposits. Cinnabar, the sulfide is the most important and contains 86% mercury by weight. Hunter has reported 100,000 to 260,000 ppb average 120,000 ppb in the ashes of coal from West Virginia. Recently Illinois State Geological Survey has reported significant content of mercury in coal from Arizona, Colorado, Montana, Ohio, Penn., Utah from .02 to 0.28 p.p.m.

According to some authorities appreciable amounts of mercury can go into solution when ground water reacts with cinnabar. Recent reports indicate high mercury level in pond and streams. Public Health Service recommends that mercury in drinking water be limited to 5 p.p.b.

LAND RECLAMATION

Use of Top Soil: A school of thought has given the following definition - "reclamation" means the process of restoring a mined area affected by a mining operation to its original or other similarly appropriate condition, considering part and possible future uses of the area and the surrounding topography, and taking into account environmental, economic and social conditions.

In order to achieve this objective, top soil (which is only few inches thick in most of the mining districts and in some practically absent) is segregated and is put back on the mined land. It must be mentioned that it is a better method than putting no top soil because the development of top soil takes thousand of years and has a definite relationship with sub-soil layers. This segregated top soil when placed on the spoil bank would tend to lose its nutrient content and water much more than if it had not been disturbed and is only useful

for growing grasses and legumes and not for deep rooted plants. In Pennsylvania this practice has produced good grass cover. However, very little information is available about the productivity of this land. In Ohio this practice has started since 1972, therefore the results are not known yet.

European Method of Reclamation

European Countries have followed this practice for a long time. While conditions and requirements will naturally vary considerably from site to site and will need to be reviewed and assessed each year, the following summary of a typical restoration program may be of interest.

1st year

August/Sept.	-	respread subsoil and root thoroughly and leave rough throughout the winter
March/April	-	3 tons/acre ground limestone on subsoil
April/May	-	respread topsoil and apply further 3 tons/ acre ground limestone
June/July	-	cultivations to produce tilth and to prepare seed bed 5cwt/acre compound fertilizer worked into seed bed 28 lb/acre seed (Cockle Park type) 2cwt/acre nitro chalk after seeds are well established

2nd year

3cwt/acre compound fertiiizer

3rd year

3cwt/acre compound fertilizer
10cwt 14% basic slag

4th year

3cwt/acre compound fertilizer

5th year

permanent under-drainage will be installed and the land reseeded
3 tons/acre ground limestone
5cwt/acre compound fertilizer worked into seed bed
28 lb/acre seeds
2cwt/acre nitro chalk after seeds are well established.

Results of Successful Reclamation Projects.

E.P.A. has completed two successful reclamation demonstration projects- Elkins Mine demonstration project in West Virginia and Moraine State Park in Pennsylvania.

Hill [6] reported the following conclusion - "The Elkins Mine Drainage Demonstration Project has produced both encouraging and discouraging results - the reclamation and revegetation of surface mines and refuse piles have resulted in a decrease in the pollution load from that source. Not all these changes occur overnight and several years will be required before all the residual pollutants are leached from the reclaimed spoil and the water approaches a stable condition."

This reclamation was completed in the spring of 1968. So far there is no material change in acid mine drainage in this water shed. During the reclamation, 651 acres of surface mines were reclaimed, 709 acres revegetated, 55 masonry seals constructed and 41 clay seals installed. The average overall surface mine reclamation cost was $2236/acre.

Foreman [7] reported the following conclusion - "Before and after data for the strip mine reclamation projects indicate a minor net decrease in the average discharge flow rates from 142 to 136 gallons per minute, an overall reduction in acidity from 50 to 22 pounds per day (a 56% reduction) and insignificant change in iron from 3 to 4 pounds per day. The strip mine reclamation costs were $672,208 for 462 acres. These costs ranged from a low of $420 to a high of $2700 per acre, for an average of $1455 per acre."

Several experts have stated that if the pyritic material is deeply buried, successful vegetation cover can be obtained and harmful leachate would not be produced. Smith [8] reported that if pulverized pyrite was buried under 3 inches, slightly acid (pH 6.7) soil in a miniature lysimeter, its rate of oxidation and acid formation was 10 to 25% as great as for pyrite within ½ inch of the surface. A similar trend should occur under field conditions. In an other experiment, he

buried pyrite under 4 feet of normal, loamy (pH 6.7) soil, essentially no acidity nor iron drained out of the bottom during 24 weeks with pulverized pyrite buried at 6 feet depths.

In a recent study Petterson [9] has successfully reclaimed mine spoils in southern Illinois with digested sewage sludge. Test plots on a barren acidic coal mine spoil showed that application of 200-250 dry tons/acre would result in a permanent vigorous grass cover while subsurface water quality was upgraded. Improvement in leachate water quality and in the spoil material itself were confirmed by laboratory column studies in which sludge treated and untreated acidic spoil material was leached daily for 110 days.

In a study by U.S. Geological Survey, [10] it is reported that a spoil bank in which pyritic material was deeply buried, did not produce acid water for two years. However, later observations showed that it supplied acid water.

This debate about the depth of burial of pyritic material would continue for a long time. The fact is that if the pyritic material would receive oxygen and moisture, it would produce acid water and toxic discharge. Oxidation has been reported at a depth of 600 feet in Arizona.[11]

CONCLUSIONS

1. Strip mining disturbs the natural surface and ground water flow system and degrades the water quality.
2. Generally, coal mining districts have a toxic overburden with only few inches of top soil. It is possible to obtain good grass cover but long term productivity of this land is limited. These districts would eventually produce acid and toxic discharge for a long time.
3. There are areas in coal mining districts where it is possible to win coal by strip mining techniques and reclaim the land without seriously affecting the ground water quality.
4. In Montana, Wyoming and North Dakota, there are huge deposits of low sulfur coal seams upto 200 feet thick. Generally overburden is very high in sodium content but alkaline and there are serious revegetation problems. Large scale stripping would affect water levels over hundreds of square miles as it has occurred in Germany. (12)
5. The cost of proper reclamation is fairly high around $4000 per acre.
6. Our country is now resorting to a large scale strip mining operation. I hope and pray that Congress which inherited a bill of 14 billion dollars in order to reclaim 4 million acres of strip land, would act with courage and foresight. If this Congress does not act now, then the costs for future Congresses will be significantly higher.

REFERENCES

1. Ahmad, M.U., Mapping of spoil banks using ERTS-A Pictures, Proceedings of the symposium on significant results obtained from ERTS-1, Sponsored by NASA/Goddard space flight Center Greenbelt, Maryland, March 5-9, 1973.

2. Dobson, Ed, "Great Britain: Strip Mining's Lazarus" a paper prepared under research grants from Sierra Club Foundation and the John Muir Institute, Sierra Club, 1971.

3. Hill, Ronald D., Mine Drainage Treatment, State of the Art and Research Needs, F.W.C.A. (E.P.A.) Cincinnati, Ohio.

4. Miller, Jan. D., Removal Dissolved Contaminants from Mine Drainage, EPA-R2-72-130, Dec. 1972.

5. Curtis, Willie R., Chemical Changes in stream flowing surface Mining in Eastern Kentucky, Fourth Symposium on Coal Mine Drainage Research Mellon Institute, April 26-27, 1972.

6. Hill, Ronald D., Elkins Mine Drainage Pollution Control Demonstration Project - an update Fourth Symposium on Coal Mine Drainage Research. Mellon Institute April 26-27, 1972.

7. Foreman, John W., Evaluation of Pollution Abatement Procedures, Moraine State Park, E.P.A. - R2-73-140, Jan. 1973.

8. Smith, Richard M., Mine Spoil Potentials for Water Quality and Controlled Erosion. E.P.A. 14010 EJE Dec. 1971.

9. Peterson, J.R. and J. Gschwind, Amelioration of coal mine spoils with digested sewage sludge. Research and Applied Technology Symposium on mined-land Reclamation. N.C.A. March 7 & 8, 1973.

10. U.S. Geological Survey Professional Paper 427-C- Influence of Strip Mining on the Hydrologic Environment of Part of Beaver Creek Basin, Kentucky, 1955-66.

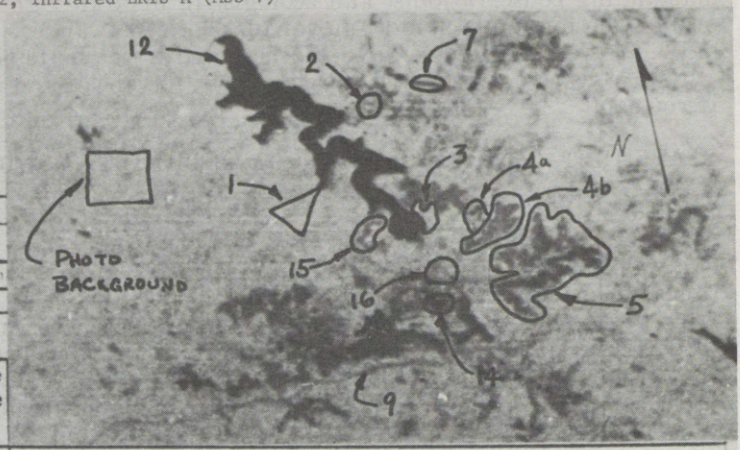
11. Lovering, T.S., "Geothermal Gradients, Recent Climatic Changes and Rate of Sulphide oxidation in the San Mannual District, Arizona, Economic Geology, Vol. XLIII, NO. 1, 1948.

12. Balke, K.D., Groundwater Research in the Open-cast Mining Area of the Southern Niederrhein - Bucht (West Germany). 24 International Geological Congress, Section II hydrogeology, Montreal 1972.

Fig.1 ERTS-A Picture MSS-7, Aug 21, 1972 showing Ohio, Muskingum River and strip mined areas



Fig.2 Lake Piedmont Study Area (Ohio) close up of Aug 21, 1972, Infrared ERTS-A (MSS-7)



Site Code No.	
1	Natural hard wood forest area.
2	Stripped area reclaimed in 1968 according to Ohio Law. Area now has grass and brush growing on it and some small trees. Coverage somewhat sparse.
3	Grass reclaimed area, well graded. Farily good coverage.
4a	Stripped valley which has been graded and newly grassed and what appears to be slightly restripped near the highwall.
4b	Stripped valley which had been graded but not yet grassed.
5	Large valley which has had massive stripping on both sides. Large highwalls and spoil banks. Entire valley practically devastated. No reclamation.
7	Location of the town of Holloway. Shows up because of coal piles and spills along an eight track wide railroad switch yard.
9	Rt. 70 - A four lane concrete highway.
12	Lake Piedmont Reservoir.
14	Location of Hanna's coal processing plant. An area of coal piles and spills.
15	A narrow stripped bench.
16	A predominently grass reclaimed area. Graded, some scattered trees, vegetation generally sparse and patchy.

Senator METCALF. Well, we now come to the witness we have been waiting for all day, a friend of Senator Gaylord Nelson, who is an outstanding conservationist and ecologist in his own right, the Honorable Chester Grabschmidt, mayor of South Milwaukee.

We are very pleased to have you here and have you testify.

I see you have a prepared statement, sir. Go ahead and summarize if you can.

STATEMENT OF HON. CHESTER GRABSCHMIDT, MAYOR, SOUTH MILWAUKEE, WIS.

Mayor GRABSCHMIDT. Thank you, Mr. Chairman.

I welcome the opportunity to appear before your committee here this afternoon. I know I am last, but I hope not the least.

To begin with, Honorable Senators, since 1965 when Senator Gaylord Nelson of the State of Wisconsin first introduced legislation in the form of Senate bill 2688 to regulate strip mining for coal and other minerals in this country, there has been a considerable amount of discussion on the environmental and economic impact of mining operations and the need to regulate such activity in a manner consistent with the public interest. Citizens throughout the country are demanding some form of regulation, and momentum for passage of rational legislation appears to be mounting.

The effects of legislation which has been introduced in the past, if enacted into law, would have ranged from the total prohibition of strip mining for coal, to extensive licensing of mining operations including requirements for reclamation of lands for other uses following the completion of mining operations.

Debate on proposed legislation during these past 8 years has centered primarily on the environmental and economic impact of mining operations in the eastern Appalachian area, and to a smaller degree in the western part of the United States, where the majority of surface mining operations are concentrated.

Largely overlooked in this debate has been the economic impact that surface mining legislation would have on many related industries throughout the United States which provide equipment, supplies, and other necessary services to the mining industry.

Also overlooked in this debate is the potential adverse effect that would be felt in certain communities of this country where mining equipment and supply manufacturing firms are located.

One such community, of which I am mayor, is the city of South Milwaukee, located in southeastern Wisconsin.

For more than 90 years, South Milwaukee has been the home of the Bucyrus-Erie Manufacturing Co., a major manufacturer of mining excavating equipment.

Since its founding in 1880, the Bucyrus-Erie Co. has grown to the extent that it now employs approximately 2,250 persons in its South Milwaukee facilities, with an annual payroll in excess of $26.5 million. Over to the left we see a picture of some of its equipment in operation.

The population of the city of South Milwaukee in 1970 was 23,297 persons of whom approximately 1,500 are directly employed in Bucyrus-Erie's South Milwaukee facility.

The average family size in our community is 3.5 persons, which means that approximately 5,250 of the city's residents depend directly on the company for wage earnings and the many other benefits which add to their economic well-being.

The long and steady growth of the Bucyrus-Erie Co. has also encouraged many other smaller related manufacturing and business enterprises to locate in our city and other surrounding communities.

We estimate that for each person employed by the Bucyrus-Erie Co., there are at least three other persons employed in related industries, service businesses, government, or education in the city.

Therefore, approximately 14,000 persons, or 60 percent of the city's total population, are either directly or indirectly dependent to varying degrees on the operations and economic well-being of the Bucyrus-Erie Co.

The city of South Milwaukee was initially incorporated in 1892 and since that time has a long and respected history of providing all essential municipal services to its businesses, industries, and residents.

To meet a growing demand for an adequate and safe supply of water, South Milwaukee became the first community on the west shore of Lake Michigan to build and construct water treatment facilities using Lake Michigan as a source.

Also, in 1937, the city built its first waste-water treatment facility to treat all of its domestic and industrial wastes.

In a continuing effort to protect the quality of surface waters in and adjacent to our city, improvements to and expansions of the sewage treatment facilities were undertaken at various times during the ensuing years, with the most recent expansion and improvement being completed in late 1972.

All of these prior city investments in essential utility services were undertaken to fulfill the needs of our growing population and expanding businesses and industries.

These improvements were always designed and undertaken in such manner so as to assure the provision of both an adequate water supply and a waste-water treatment system which complied with State and Federal water pollution control standards.

The industries of our community have contributed in large measure through local taxation to provide the necessary funds for constructing these major capital improvements which have either solved or prevented the created of local environmental problems.

To further illustrate the level of support which the Bucyrus-Erie Co. provides to the city of South Milwaukee, I would note that in 1972 the company paid real estate and personal property taxes in the amount of $841,667.14 for the city's governmental and educational programs alone. $841,667.14 represents approximately one-sixth of all taxes collected for municipal and local school operations in our city.

Any significant change in the company's operations as a result of the enactment of legislation which totally abolishes or severely curtails surface mining would have a far-reaching and disastrous impact on the economic stability of our city and its citizens.

As the mayor of the city of South Milwaukee, I strongly support the legislation which serves to protect the environment in a manner which is consistent with the economic stability of the mining and mining-related industries in this country. I believe this can be accom-

plished through the adoption of effective reclamation procedures for surface mining which do not directly and totally ban such mining. To this extent, I herewith lend my support to many of the provisions of Senate bill 426.

In particular, I support the intent and purpose of the bill which finds and declares that the extraction of minerals by mining operations is a significant and essential activity which contributes to the economic, social, and well-being of the Nation, and that the effective regulation of mining operations by the States and by the Federal Government is an appropriate and necessary means to prevent only the adverse social, economic, and environmental effects of mining operations, the aftereffects of which we see pictures posed around the room here this afternoon.

I also support the provision of the bill which grants authority for the promulgation of Federal regulations through an office to be created which would have the power to set forth land use policies and reclamation and enforcement procedures, or in lieu thereof to delegate all such authority to the respective States in which surface mining is actively pursued.

There, are, however, certain provisions of the bill which I feel have been drafted in such a manner that practicable and unnecessary hardships could be imposed upon the mining industry and in turn could have serious economic impact upon other industries who supply the necessary equipment and supplies for their operations.

It would be unfortunate if enforcement of the requirements for reclamation or for designating whole areas unsuitable for surface mining as currently drafted in the bill would result in the needless closing of existing mines and would inhibit future resource development.

The bill, if appropriately drafted, could set standards that are easily defined and attainable in the mining and reclamation process and at a cost which is consistent with the benefits derived from the reclamation process.

As an example. one objection to the bill is the possible requirement for restoration of mined areas to achieve the approximate original contour of the land. I feel that it would be much more practicable to permit mining where reclamation plans can be developed which would return the land to a condition capable of supporting desirable and practical uses in conformance with long-range development plans for the area.

Those provisions of the bill which deal with the designation of existing unmined areas as being unsuitable for surface mining would be more practicable if written in such manner to assure that all existing mining operations could continue within their existing and committed areas of operation.

We also fel that unsuitable areas should be clearly designated only within the context of larger areawide plans which would more precisely define the standards, the principles and the objectives which the regulatory agency has promulgated, and which they would employ to achieve their findings or determinations that these areas are important for the protection of natural resources including the protection of surface waters or the prevention of significant erosion problems.

I also feel that the permit system proposed in the bill should provide for the issuance of permits for a length of time which is con-

sistent with the projected life of an existing or proposed mine, and which is consistent with sound capital investment principles which are necessary when mining firms acquire lands containing mineral resources or acquire the necessary equipment and supplies for its extraction.

In order for the mining industry to attract the necessary capital for its extraction operations and to make its investments in equipment, such as is manufactured by the Bucyrus-Erie Co., I feel that it would be essential that the State and Federal permit be stable for the projected life of individual mines.

We also feel that the issuance of a permit should be permanently granted and serve as a notice that surface mining in a certain area will be taking place immediately or at some future date, and that the permit has been granted in accordance with the provisions of long-range development plans for the area and in accordance with specific reclamation plans for the site which have been approved by the regulatory agency.

Such a procedure would be very similar to the grant of long-term zoning rights to private property owners that we exercise at the municipal level to achieve conformance with our long-range community land use plans.

We further feel it is incumbent upon the Federal or State Government to specifically designate areas that have been identified and explored and found to contain significant mineral or fuel resources well in advance of actual mining operations by any individual mining company.

To fully protect such areas, other land uses which may preclude the extraction of the mineral or fuel resources at a future date shall be prohibited.

Such action on the part of the State and Federal Government would be extremely valuable and important to protect the mineral and fuel resources of our country and would also serve to stabilize the mining and mining equipment industries.

The Congress, in adopting such legislation, would, therefore, assist private industry in reaching those important decisions that must be made with respect to the investment of capital by financial institutions by the mining equipment industry and by the units of government directly affected with the Nation's fuel and mineral resources.

In conclusion, I firmly believe that mining legislation should be passed which is realistically designed to assist the mining industry in conducting surface mining operations so as to have the least practicable effect on our natural resources and environment.

Our community, and all communities in the country need the coal and the minerals from our mines. Our jobs and our prosperity depend on these raw materials in a nation as highly industrialized as ours.

I am sure no matter what region of this country we reside in, we have all come to selfishly strive for the protection of our natural resources and the protection of our natural environment as well as the economic stability of our community.

We feel that it is unfortunate that previous legislation was not enacted to impose restraints on adverse mining operations which could have eliminated the more drastic restraints now being considered.

These are the remarks of the mayor of South Milwaukee, as authorized for me to give here this afternoon, and we thank you for the opportunity.

Senator METCALF. Thank you for coming, and giving us your views.

I think that we should always consider some peripheral effects of this legislation. Sometimes we don't have an opportunity to find out what the various fringe effects are.

You might be interested to know that yesterday members of the American Mining Congress testified here and said that they were severely handicapped in carrying out some of the restoration and reclamation provisions because some of the huge machinery such as you have pictured over here on the wall was not available and wouldn't be available for 2 or 3 years. They indicated that if legislation such as S. 425, were passed, there would be an increased demand for the kind of draglines and shovels and so forth that you are indicating are the lifeblood of the community in which you live.

So, we are certainly not going to pass legislation and take the employment away from your community. In fact, it may well result in something beneficial.

Mayor GRABSCHMIDT. That is very well taken, Senator, but I wanted to make it clear that I am presenting myself here in a protective interest, and really not an interest of the concern itself. So, whatever benefits that may be received, they certainly are going to have an input upon our societies' economic growth as well, but I am concerned in protecting what we have here.

It is likened to going out looking for a new industry and overlooking what you presently have, and not guarding what you have got for the sake of losing that and getting something else that is maybe less desirable.

Senator METCALF. Thank you very much for your appearance.

Mayor GRABSCHMIDT. Thank you very much.

[The prepared statement of Mayor Grabschmidt follows:]

City of SOUTH MILWAUKEE

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Office of the Mayor

STATEMENT OF THE CITY OF SOUTH MILWAUKEE

to the

SENATE INTERIOR AND INSULAR AFFAIRS COMMITTEE

HONORABLE SENATOR HENRY M. JACKSON, CHAIRMAN

March 15, 1973

Since 1965 when Senator Gaylord Nelson of the State of Wisconsin first introduced legislation in the form of Senate Bill 2688 to regulate strip mining for coal and other minerals in this country, there has been a considerable amount of discussion on the environmental and economic impact of mining operations and the need to regulate such activity in a manner consistent with the public interest. Citizens throughout the Country are demanding some form of regulation, and momentum for passage of rational legislation appears to be mounting.

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Appalachian area, and to a smaller degree in the western part of the United States, where the majority of surface mining operations are concentrated.

Largely overlooked in this debate has been the economic impact that surface mining legislation would have on many related industries throughout the United States which provide equipment, supplies and other necessary services to the mining industry. Also overlooked in this debate is the potential adverse effect that would be felt in certain communities of this country where mining equipment and supply manufacturing firms are located. One such community, of which I am Mayor, is the City of South Milwaukee located in Southeastern Wisconsin. For more than 90 years South Milwaukee has been the home of the Bucyrus-Erie Manufacturing Company -- a major manufacturer of mining excavating equipment.

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As the Mayor of the City of South Milwaukee, I strongly support legislation which serves to protect the environment in a manner which is consistent with the economic stability of the mining and mining related industries in this Country. I believe this can be accomplished through the adoption of effective reclamation procedures

for surface mining which do not directly and totally ban such mining. To this extent I herewith lend my support to many of the provisions of Senate Bill 425.

In particular, I support the intent and purpose of the Bill which finds and declares that the extraction of minerals by mining operations is a significant and essential activity which contributes to the economic, social and well-being of the Nation and that the effective regulation of mining operations by the States and by the Federal Government is an appropriate and necessary means to prevent only the adverse social, economic and environmental effects of mining operations.

I also support the provisions of the Bill which grant authority for the promulgation of Federal regulations through an office to be created which would have the power to set forth land use policies and reclamation and enforcement procedures, or in lieu thereof to delegate all such authority to the respective states in which surface mining is actively pursued.

There are, however, certain provisions of the Bill which I feel have been drafted in such a manner that practicable and unnecessary hardships could be imposed upon the mining industry and in turn could have serious economic impact upon other industries who supply the necessary equipment and supplies for their operations.

It would be unfortunate if enforcement of the requirements for reclamation or for designating whole areas unsuitable for surface mining as currently drafted in the Bill would result in the needless

closing of existing mines and would inhibit future resource development. The Bill, if appropriately drafted, could set standards that are easily defined and attainable in the mining and reclamation process and at a cost which is consistent with the benefits derived from the reclamation process.

As an example, one objection to the Bill is the possible requirement for restoration of mined areas to achieve the approximate original contour of the land. I feel that it would be much more practicable to permit mining where reclamation plans can be developed which would return the land to a condition capable of supporting desirable and practical uses in conformance with long range development plans for the area.

Those provisions of the Bill which deal with the designation of existing unmined areas as being unsuitable for surface mining would be more practicable if written in such manner to assure that all existing mining operations could continue within their existing and committed areas of operation. We also feel that unsuitable areas should be clearly designated only within the context of larger area-wide plans which would more precisely define the standards, the principles and the objectives which the regulatory agency has promulgated and which they would employ to achieve their findings or determinations that these areas are important for the protection of natural resources including the protection of surface waters or the prevention of significant erosion problems.

I also feel that the permit system proposed in the Bill should provide for the issuance of permits for a length of time which is consistent with the projected life of an existing or proposed mine, and which is consistent with sound capital investment principles which are necessary when mining firms acquire lands containing mineral resources or acquire the necessary equipment and supplies for its extraction. In order for the mining industry to attract the necessary capital for its extraction operations and to make its investments in equipment, such as is manufactured by the Bucyrus-Erie Company, I feel that it would be essential that the State and Federal permit be stable for the projected life of individual mines. We also feel that the issuance of a permit should be permanently granted and serve as a notice that surface mining in a certain area will be taking place immediately or at some future date and that the permit has been granted in accordance with the provisions of long range development plans for the area and in accordance with specific reclamation plans for the site which have been approved by the regulatory agency. Such a procedure would be very similar to the grant of long term zoning rights to private property owners that we exercise at the municipal level to achieve conformance with our long range community land use plans.

We further feel that it is incumbent upon the Federal Government or the State Government to specifically designate areas that have been identified and explored and found to contain significant mineral

or fuel resources well in advance of actual mining operations by any individual mining company. To fully protect such areas, other land uses which may preclude the extraction of the mineral or fuel resources at a future date shall be prohibited. Such action on the part of the States and Federal Government would be extremely valuable and important to protect the mineral and fuel resources of our Country and would also serve to stabilize the mining and mining equipment industries.

The Congress, in adopting such legislation, would therefore assist private industry in reaching those important decisions that must be made with respect to the investment of capital by financial institutions by the mining equipment industry and by the units of government directly effected with the nations fuel and mineral resources.

In conclusion, I firmly believe that mining legislation should be passed which is realistically designed to assist the mining industry in conducting surface mining operations so as to have the least practicable effect on our natural resources and environment. Our Community and all communities in the Country need the coal and the minerals from our mines. Our jobs and our prosperity depend on these raw materials in a nation as highly industrialized as ours. I am sure no matter what region of this Country we reside in, we have all come to selfishly strive for the protection of our natural resources and the protection of our natural environment as well as the economic stability of our community. We feel that it is unfortunate that previous legislation was not enacted to impose restraints on adverse mining operations which could have eliminated the more drastic restraints now being considered.

Senator METCALF. Now, we have completed the hearing for the day.

Thank you all for your attention, and your consideration, and we will recess until 9:30 tomorrow.

[Whereupon, at 5:40 p.m., the committee was recessed, to reconvene at 9:30 a.m., Friday, March 16, 1973.]

REGULATION OF SURFACE MINING LEGISLATION

FRIDAY, MARCH 16, 1973

U.S. SENATE,
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The committee met at 9:30 a.m. in room 3110, Everett McKinley Dirksen Office Building, Hon. Lee Metcalf, presiding.

Present: Senators Metcalf, Haskell, Fannin, Hansen, and McClure.

Also present: Jerry T. Verkler, staff director; Bill Van Ness, chief counsel; Harrison Loesch, minority counsel; Fred Craft, assistant minority counsel; D. Michael Harvey, special counsel; and Ella Mae Horse, staff assistant.

Senator METCALF. The committee will be in order. This is a continuation of hearings on S. 425, S. 923, S. 1163, and other surface mining legislation bills before the Senate Committee on Interior and Insular Affairs.

This morning I am very pleased and gratified that the first witness is Mr. Walter Rogers.

Mr. Rogers and I came to Congress together more years ago than I would like to think about, and served as colleagues on the Interior and Insular Affairs Committee in the House of Representatives, and have fought many battles together as colleagues.

I am delighted to have you here to appear before us as the first witness today.

STATEMENT OF WALTER E. ROGERS, PRESIDENT, INDEPENDENT NATURAL GAS ASSOCIATION OF AMERICA

Mr. ROGERS. Thank you, Senator, it is good to see you again in apparently good health; I hope you continue that way.

I think in the interest of time it would probably be better if I read the statement. It is very short.

Senator METCALF. Thank you very much.

Mr. ROGERS. My name is Walter E. Rogers. I am president of the Independent Natural Gas Association of America, INGAA. This association is composed of major natural gas transmission companies of the United States and producers and distributers of natural gas.

I am appearing as a representative of the gas segment of the energy industry, and I claim no particular expertise in mining or reclamation.

The growing inadequacy of the domestic supply of oil and gas is fact, not opinion. The time lag inherent in development of new and expanding domestic supply capability means that demand for such fuels cannot be satisfied conventionally for many years to come, if at all.

Under these circumstances, any restrictions placed on the contribution to supply by other fuels or energy sources will only magnify the problem of dependence on foreign imports.

Coal production represents a substantial part of the Nation's energy supply. An adequate energy supply is, in turn, essential to the continued improvement of the quality of life and productivity enjoyed by our people. The quality of the physical environment also has a direct bearing on life style and must be preserved.

Therefore, just as sound reclamation practices are essential to the preservation of the physical environment, a viable coal mining industry is essential to our social and economic well being.

I shall now focus my remarks on the particular significance of coal for future gas supply. Natural gas production in 1972 was almost 23 trillion cubic feet. This was a maximum production effort that nevertheless resulted in curtailments to many major users during the winter months.

Without substantial new reserve additions, production capability will decline. By 1985, maximum wellhead deliverability from currently proved reserves will be less than 7 trillion cubic feet.

With a continuation of the downward trends in drilling activity and discovery rates, the December 1972 energy study by the National Petroleum Council projected that annual gas production would decline 35 percent by 1985 to approximately 14 trillion cubic feet.

It is highly unlikely that gas supply can be increased rapidly enough to satisfy potential gas demand through the year 1980, even if the increase in demand is calculated at half the rate experienced in the 1960's. And I might say that the rate of increase during the 1960's was approximately 6 percent annually.

In an effort to help ameliorate this situation, the natural gas industry is attempting to supplement wellhead production with projects to import liquefied natural gas and to convert naphtha and crude oil to synthetic natural gas.

Efforts are also being made to utilize nuclear explosive stimulation technology in areas where conventional well completion techniques have proven inadequate.

However, assuming a maximum contribution from sources of gas supply, it may be 1985 or later before supply can overtake demand.

Under such conditions, it is significant that coal represents more than 70 percent of the remaining fossil fuel potential in the United States and that coal can be converted to high Btu, or pipeline quality, gas with available technology.

Certainly, an inadequate energy supply condition will be harmful to the public interest. Therefore, the urgency with which coal mines and gas conversion complexes should be developed is apparent.

It had been forecast by the Department of the Interior that 19 million tons of coal might be mined by 1980 for the purpose of conversion to gas. However, events have outpaced the forecast.

Two coal gasification project applications have already been filed with the Federal Power Commission calling for a total of almost 18½ million tons of coal production a year by 1977.

These two plants will produce 166 billion cubic feet of high Btu gas each year. This is only a beginning, and it represents less than 1 percent of today's gas production volume.

Senator METCALF. Where are these plants going to be located?

Mr. ROGERS. In the area close to Four Corners right by the San Juan River, close to the San Juan Navaho project in New Mexico.

Other gas companies are in the process of finalizing similar plans and are expected to file soon with the Federal Power Commission for authorization to construct coal gasification plants before 1980.

This needed activity will occur if plans to construct such facilities where large coal reserves are known to exist can be pursued without delay.

Each plant will require 200 to 300 million tons of nearby reserves and is expected to cost over $400 million. The financing of these plants, which must cover costly preliminary planning, reserve acquisition and engineering analysis and estimating, cannot be accomplished if access to known coal reserves is hindered through delay and procedural uncertainty.

What is needed now is the swift passage of workable reclamation legislation so that the gas suppliers can proceed in their efforts to reduce the otherwise increasing gravity of the energy crisis.

In that regard, we believe there are a few sections of Senate bill S. 425 that warrant general comment, leaving to those knowledgeable in mining and mined land reclamation the opportunity of commenting on the specifics.

Section 215 of the bill, page 36, entitled "designation of land areas unsuitable for surface mining," authorizes the Secretary of the Interior to "make annual grants to each State for the purpose of assisting in the development of a State land use planning process capable of making objective decisions * * * as to which, if any, land areas of a State are unsuitable for all or certain types of surface mining. * * *" The section further provides that an area may be declared unsuitable for mining if:

(A) Reclamation, as defined in the act, is not physically or economically possible.

Now, Senator, I might point out that that is not a direct quote from the bill, as a matter of fact, reclamation is not defined in the bill but it is referred to generally.

(B) Mining "would be incompatible with * * * essential governmental objectives."

(C) And, this is a direct quote from the bill, "The area is an area of critical environmental concern."

Subsection (A) above raises the issue of State land zoning in a manner that could result in the wholesale exclusion of coal reserves from consideration for mining for reasons unrelated to reclamation.

As defined in section 212(b)(4) of the bill, page 27, reclamation requires establishment of a "self-regenerating vegetative cover."

Thus, by definition, the arid desert and semi-desert areas prevalent in the Western States could be declared unsuitable for mining because they could not be proven capable of a "self-regenerative vegetative cover" prior to mining.

In regard to the question of economics, the coal producer is the one best able to determine whether required reclamation expenses are economically justified in the light of total project costs and potential revenues.

Subsection (B) above would permit any State to set its own "essential governmental objectives." No definitions, descriptions, or statement of objectives are given for the purpose of helping formulate such standards.

Absent such criteria, it would appear that a State could set standards that prevent surface mining operations in that State.

Physical conditions determine whether coal is mineable by surface or sub-surface methods. Coal at shallow depths is usually not recoverable by underground methods.

However, where shallow sub-surface mining is possible, the support pillars that must be left standing result in leaving 50 percent of the coal underground permanently. This cannot be regarded as an efficient conservation practice, particularly in view of the current energy supply situation.

Subsection (B) above would permit any State to prohibit mining in areas of "critical environmental concern." We, of course, favor protection to critical environmental areas.

We fear, however, that unless S. 425 sets precise standards, surface mining in areas containing vast amounts of needed coal reserves might be prevented without due regard for public interest considerations.

Section 212(c), page 30 of the bill, permits mining thick mineral deposits under special reclamation regulations, but coal is expected from receiving such permission.

The exception as to coal means that mining can be largely excluded from the Powder River Basin of Montana and Wyoming, where a coal seam or seams are 50 to 100 feet thick, because the overburden cannot fill the resulting void.

Hence, the area may not be able to be restored to the capability of supporting a use equal to the use possible prior to mining, section 212(B)(1), page 26. The effect of this provision would appear to prevent mining the largest single coal reserve area in the United States.

Senator METCALF. Do you have any plans for gasification in the Powder River Basin?

Mr. ROGERS. Not yet.

Senator METCALF. You are just pointing out that there is a vast reserve that is one of the potentials for gasification?

Mr. ROGERS. That is correct.

Section 206, page 14 provides for a moratorium on mining operations for 1 year following the bill's passage. Only very limited exceptions are made. None of the exceptions will cover the mining operations for the two coal gasification plants for which Federal Power Commission filings have already been made.

A moratorium can substantially delay the construction of gasification complexes that depend upon the development of coal mines. The prospective uncertainty of the date of passage of the bill, and therefore the commencement date of the moratorium would introduce an additional planning impediment.

Also, moratoriums quite often result in failure to deal with the difficult issues during the period of inactivity, thereby causing additional delay.

It would also seem that, from the standpoint of minimizing administrative and procedural burdens wherever possible, only the initial environmental impact statement is needed for a mining permit.

Rather than imposing an annual environmental statement obligation, it might be more constructive to require supplemental statements only when, and if, the physical or environmental conditions have changed so as to require some specific reconsideration.

In that event, the submission should be made as soon as practicable, rather than waiting for the prescribed annual filing date. For this reason, we recommend consideration of a provision that, in effect, grants an exemption from the annual renewal statement filing requirement of the National Environmental Policy Act along the lines suggested.

Clear legislative and regulatory directions benefit both public and industry, particularly when involving such long-term capital intensive operations as those under consideration. The importance of coal to our energy-dependent society requires that any land use policy recognize that a priority among land uses must be contemplated. This is particularly true because of the decline in reserves of oil and gas being experienced. Comprehensive planning requires that local, regional and national needs, physical and social, be served.

Responsible mining industry operations must entail what is essentially a stewardship role having unobscured objectives. Administrative responsibility includes defining those objectives with as much precision as possible and providing those mechanisms designed to assure their attainment in a functional manner.

With the exceptions mentioned above, we commend Senate bill S. 425. We have concluded that if so modified, it will succeed in closely approaching those standards. We hope that our recommendations serve to assist in the passage of a most timely and important piece of legislation needed to balance both environmental and energy policy consideration.

Thank you.

Senator METCALF. Thank you, Mr. Rogers. That is a splendid statement.

I was wondering what the Gas Association had to do with strip mining, but you have certainly made it clear that you have a significant and important stake in this activity.

This committee is determined to meet the urgent need for passage of adequate legislation. I am sure that you and your industry will have, hopefully before the end of the fiscal year, some legislation from the entire Congress that will show the kind of controls that you have to meet.

Mr. ROGERS. Senator, we would hope that we could find enough gas although it is highly doubtful that we wouldn't be interested in strip mining.

Senator METCALF. I would hope that, too, however, I am going to talk to you one of these days about that.

I am thinking of restricting the sale of your natural gas to such large industrial companies such as the Anaconda Co., which have an ability to transfer over to some other fuel sources and preserve that very valuable and clean and important resource for home fuel heating.

Because of the depleting supply of that energy resource, we are going to have to use it as prudently and economically as possible.

How much water do you need in these gasifications, we have some data on that, but I would like to have the record of this here.

Mr. ROGERS. It is a very serious situation and I have with me a breakdown of the estimates of the El Paso Gasification Contract at Bingham, N. Mex., and the water requirements, according to this estimate, are 700,000 acre-feet or 28,250 acre-feet per year for 25 years to gasify the entire 700 million tons of coal. So, for our problem alone this is the one plan, 250 million cubic feet per day production will require 10,000 acre-feet of water per year.

Senator METCALF. That is a daily supply of 10,000 acre-feet of water?

Mr. ROGERS. That is right.

Senator METCALF. Is that water totally consumed, Mr. Rogers, or is it put back into the watershed?

Mr. ROGERS. Senator, I don't know really because as I said in the first place, I certainly take no credit for knowledge with regard to coal or coal mining, or the coal gasification contract.

Now, I do have here a statement that was prepared in our office with relation to the El Paso contract that if you would like, I could put into the record.

Senator METCALF. I wish you would supply it for the staff.

Mr. ROGERS. I think it has some information as to costs of the project that would be very helpful.

Senator METCALF. The oral statement may warrant the record but please supply it for the staff, and we will put these necessary parts of the information for those who want to read it as far as this record is concerned.

Mr. ROGERS. It is only one page.

Senator METCALF. Fine. It will all be incorporated in the record.

As you know from the days of Hell's Canyon when we were fighting the battles together over in the House Interior Committee, all of us on this committee are very much concerned about water as well as coal. It is a part of the whole program with which we are going to be confronted.

I am pleased that you have made some suggestions about the impact of specific legislative sections on you and your industry and the people you represent. That helps us in consideration of the bill.

We have before us, Mr. Rogers, another bill, S. 923, the administration proposal introduced by Senator Jackson and Senator Fannin. In courtesy to the administration, we are going to give every consideration to that bill. I hope that you will give the same thorough analysis of that bill if you can, and that you and your staff attorneys will file a supplementary statement on it.

Mr. ROGERS. That is S. 923?

Senator METCALF. Yes, S. 923. There are two other bills, S. 1163, which gives administration of the Federal program to the EPA rather than the Secretary of the Interior, and a bill by Senator Case calling for complete prohibition of surface mining which is substantially the same as H.R. 1000 in the House, Congressman Hechler's bill. You may want to have your staff look at that legislation, too, and give us some comments or additional material for the record.

Thank you for a very helpful statement. Thank you for coming early and helping us close out these hearings.

Senator Hansen.

Senator HANSEN. Thank you, Mr. Chairman.

Mr. Rogers, let me compliment you on the work you have done in analyzing the impact of new surface mining law upon the availability of natural gas or synthetic gas that might be manufactured from coal, as it relates to satisfying our Nation's needs.

I am very pleased, indeed, that you reminded us once more that our gas reserves are dwindling. Not too many years ago we had at the then rate of consumption, reserves, or proven reserves for about 20 years.

Mr. ROGERS. Close to 30.

Senator HANSEN. It depends on how far back you go. Presently we are less than 10, around 9.

Mr. ROGERS. I think unless you take into consideration, if you take into consideration the increase in the demand, that it is a little less than 10. Somewhere between 10 and 11 would be a very liberal view.

Senator HANSEN. One of the points that you bring up is the loss of coal that could be occasioned by the conventional mining and underground methods we presently have. I gather that our coal supplies stand a much better chance of supporting our needs in the distant future if we avail ourselves of the far greater total recovery that would be achieved through surface mining and the underground mining. Is that the thrust of your statement?

Mr. ROGERS. Yes.

Senator HANSEN. Did you speak in terms of millions or billions when you indicated to the chairman of the committee what requirements are necessary to produce a number of cubic feet of gas per day through the process of coal gassification?

Mr. ROGERS. Per day it would be 250,000 million cubic feet, which would be 250 million cubic feet.

Senator HANSEN. 250,000 million cubic feet. If we were to try to produce that much gas from coal under present technology, would it require water in the amount of 10,000 acre-feet per year?

Mr. ROGERS. That is right.

Senator HANSEN. I thought maybe that either I misunderstood you or you possibly made a——

Senator METCALFE. What I wanted to point out was the daily requirement of water. It isn't an irrigation requirement, 10,000 acre-feet per year, yes.

Senator HANSEN. But what you meant was that it requires so much water every day.

Senator METCALF. Yes.

Senator HANSEN. And the total consumption would be 10,000 acre-feet per year?

Mr. ROGERS. That is right.

Senator HANSEN. I wanted to be sure I understand it.

Senator METCALF. I am glad that you clarified that. All I wanted to do was to point out that this is a rather different demand for water than some of our other western demands, even in hydroelectric power which is just used for peaking. But here is a daily constant fixed demand that comes up 365 days a year.

Senator HANSEN. As the chairman so very well knows, Mr. Rogers, if you try to compare that with an irrigation requirement, it doesn't

fit at all. It is like trying to compare apples and oranges. In Montana and Wyoming, we can grow crops very fast, in such a short period of time, and we don't have to take all year round like California and Florida.

Would you please refer to page 5 of your testimony? In the final sentence in the first full paragraph you state that in regard to the question of economics, the coal producer is the one best able to determine whether required reclamation expenses are economically justified in the light of total project costs and potential revenues.

I gather what you are saying is that it is not a question of whether the coal operator is going to carry on a reclamation program or not, but whether the cost of the reclamation program will make it worthwhile to try to recover the coal?

Mr. ROGERS. That is very well put, Senator, that is exactly right.

Senator HANSEN. On page six you talk about section 212(c) page 30. Maybe you made a correction there. I am not sure.

Senator METCALF. He did make a correction.

Mr. ROGERS. On the second one, now the one where the paragraph begins, that is the correct citation.

Senator HANSEN. You said this section permits mining thick mineral deposits under special reclamation regulations. However, coal is excepted from receiving such permission. The exception as to coal means that mining can be largely excluded from the Powder River Basin of Montana and Wyoming, where a coal seam or seams are 50 to 100 feet thick, because the overburden cannot fill the resulting void. Hence, the area may not be able to be restored to the capability of supporting a use equal to the use possible prior to mining.

Do you interpret the language in the bill before us, S. 425, to imply or to require among other things, that the back fill has to return the land to its original contour? Is that where you reach the conclusion that you do here?

Mr. ROGERS. Senator, the reason for that conclusion is—Now, the courts may not interpret it that way but we do, because when you take section 212(c), page 30 of the bill, it permits mining but it says for other minerals, which eliminates coal because coal and other minerals are separated throughout the bill.

Now, when you refer back to page 26 to small (b)(1), it says each State program and each Federal program shall include regulations which at a minimum require each permittee to return all surface areas to a condition at least fully capable of supporting the uses which they were capable of supporting prior to any mining, which condition however, shall not present any hazard to public health or safety.

Now, I just feel that if some delineation, or some definition is not made as to what the reclamation requirement will be, as to how much the void shall be filled, or with regard to drainage problems and things of that kind, that the courts could say, well, they meant to put it right back like it was.

Senator HANSEN. I recognize that those areas in the West, with which I am somewhat familiar, do present some problems that are rather unique.

In the Eastern part of the United States the coal seams are not thick enough to prevent the original contour roughly being restored if all of the spoil material were put back in place. Eventually it will

settle whenever you take anything out of the ground. As time moves on, it will reach a degree of compaction roughly similar to that which it had earlier. Is it your understanding that, in the short term, some of the reclamation possibilities might cause you to find as you put the material back that it isn't as compact as it was when it was in place, that it may be a little above the original contour rather than to be below?

Mr. ROGERS. Yes.

Senator HANSEN. Around the northeastern part of Wyoming, in the Gillette area, when I visited with Senator Moss and Senator Jordan of Idaho, we were shown the wildcat operation which at that time involved the removal of about 27 feet of overburden to expose two seams of coal that were separated by only a few inches of material. The seams of coal total 93 feet in thickness.

The resident manager there pointed out that there wouldn't be sufficient material to cover an exposed area to prevent a mine fall. This was a big hole in the ground. In its appearance I think you might say it is not unlike some of the open pit mines.

They removed a far greater amount of material than there is unusable material to put back in the hole. Nevertheless, I gathered in talking with Ed Ross out there that as this coal was mined—I think they were recovering about 70,000 tons of coal per acre at that time—they might eventually anticipate an area that would be somewhat slightly depressed from the original area. However, the contour within this mined area, in all probability, could be restored to what it was earlier, except it would be slightly lower.

Under that sort of a situation, would you still say that it would not be possible to restore the capability of that area to the use possible prior to the beginning of the mining operation?

Mr. ROGERS. Senator, I think you have an excellent point there but our position is simply this, that we feel that whatever legislation is passed should not foreclose options of the Federal Government to make changes without having to come back and get the law amended. That is the major point.

Senator HANSEN. On page 7 of your statement you speak about the requirement of an annual environmental statement being prepared. I must say that I quite agree with you. The consideration which should precede an actual mining operation ought to be of sufficient latitude and depth to ensure that we can contemplate rather completely what the environmental problems are. We should not subject the mining operation to the annual requirement of going back each year and again subjecting yourself to that sort of an examination.

In that respect, I think the point is well taken.

Mr. ROGERS. Our feeling, Senator, in that regard, is that this is a limited operation when you talk about area covered, since there are provisions for inspection and an environmental protective agency is constantly watching this.

Senator HANSEN. Thank you, Mr. Chairman.

Senator METCALF. Thank you very much.

I want to suggest that, having been around Washington for 20 years and having come past the New Madison Library and driving by the new FBI Building, the Metro Building, we are digging enough dirt out of Washington to fill up all of that.

Mr. ROGERS. Thank you, gentlemen.

Senator METCALF. Senator Fannin.

Senator FANNIN. Mr. Rogers, we are certainly pleased to have you with us today. We always appreciate your cooperation and your sensible contribution to the testimony. There are several items which you have raised about which we appreciate the information.

I am interested in your statements regarding coal gasification since you reflect that the remaining fossil fuel potential in the United States is in coal. So, if we are going to be self-sufficient, that is the source we must depend upon. I think we all agree on that.

The two coal gasification plans that you mentioned will produce less than 1 percent of today's gas production. Is it close to the right value.

Mr. ROGERS. Well, mathematics have always destroyed me, but it would be less than 1 percent of the 23 trillion cubic feet that is required and I think it is somewhere between—the estimate is somewhere between 0.6 and 0.9.

Senator FANNIN. About this, I was really surprised. Do you have any idea as to what the cost per thousand cubic feet or based upon a thousand feet yield could be?

Mr. ROGERS. Yes, Senator, this of course is one of the things that enters into the economics of the situation as you know, because there is a jurisdictional problem with regard to synthetic gas and the Federal Power Commission has taken the position that they do not get jurisdiction of synthetic gas until it is mixed with natural gas.

Senator FANNIN. I was trying to divide the costs.

Mr. ROGERS. This would be synthetic gas. Now, under the El Paso estimates of their plan, they are talking about a cost of around $1.21.

Senator FANNIN. Is that per thousand?

Mr. ROGERS. $1.21 for 1,000 Mcf, that is the cost to them.

Senator FANNIN. And you are talking about the conversion of this down to 550 Btu?

Mr. ROGERS. No, it is pipeline quality gas, I think it is around 972 Btu.

Senator FANNIN. Yes, it was in the neighborhood of 1,000 Btu, the same as we are having in the lines now, that is what I was trying to arrive at.

Now, we had testimony yesterday wherein one of the witnesses was talking about the importation of LNG at a rate less than 85 cents per thousand cubic feet. In all of the figures I have seen, this is the first time I had heard that lower figure. I think they are dreaming. Don't you think that this is far below what actually will be faced if LNG is imported? Even the closest source, I think about over a dollar, was indicated and if Russia is the source, I imagine it would be fortunate if it were imported at $1.25 to maybe $1.50.

So, with the prices discussed for coal gasification, it would be below that price?

Mr. ROGERS. Yes, and I would like to point out at this time on that, that when we are talking about this LNG and talking about it in relation to SNG, and a competitive situation, actually there is no competition. The coal should be developed just as fast as we can because we are talking about let's say less than 1 percent. The LNG we are talking about importing from Algeria and Russia, and my figures are a little vague, it would be less than 5 percent of the demand of this Nation.

So, the point I am making is that we need all the energy we can get from every source.

Senator FANNIN. That is right. I am glad you brought that up because I know there have been figures of never getting over 10 percent with our import. Of course, I am hopeful that we don't even have to depend on that much, since 10 percent or 5 percent would greatly affect the imbalance of trade, adding to the deficit.

You mentioned about doing more at the Federal level to encourage the development of better techniques on coal gasification. We have only appropriated approximately $52 million this year for all these programs, not just LNG. Do you think this is sufficient?

Mr. ROGERS. Well, that is a very difficult question to answer. They have a coal gasification process working now between the Federal Government and the American Gas Association, which has been very good and I think is excellent from all standpoints. The situation I think, insofar as coal gasification is concerned right now, has to do primarily with economics. It is sort of like the water desalting program, it gets down to a bedrock of economics and I think the Federal Government has done a lot, perhaps they could do a lot more if it could speed this situation up.

Senator FANNIN. That is my point. When billions of dollars of imports are discussed, it reflects an expenditure of $52 million to offset the impact. Even if it is a percentage of that amount, it seems that we are really not being intelligent in handing the problem on this basis. I know that this is not in your field, but just like the work on geothermal steam, progress is being made. I don't know whether you know that a geothermal well near Phoenix, Ariz., was just struck a couple of weeks ago.

Mr. ROGERS. We went into this program at length when I was in the House if the chairman will remember, and there are some deposits in New Mexico, too, but I am glad to hear this.

Senator FANNIN. We don't know exactly what will result, but a geothermal well is being drilled. It looks good.

The good faith about which you speak is recognized by the desire of the companies to have reclamation. The people which you refer to on page 5 of your statement, I think raises the fear that too much will be expected of a self-regenerative vegetative cover. For instance, in the arid lands of Arizona and New Mexico are so dependent on the rainfall. Notwithstanding this winter when Arizona had plenty of rainfall, by comparison to the 6 months last spring without any rainfall, not even a drop in some areas.

This requirement could be very damaging, as I understand, to companies that were bonding for the assurance that this revegetation would occur. It would be pretty difficult to guarantee rainfall.

Mr. ROGERS. Oh, yes.

Senator FANNIN. So, I am glad you did bring that out as the different processes of mining are assessed, I know that we would like to see the surface of our earth in our different States often remain as it is. We wish sometimes that Mother Nature didn't tear it up so much, although we are glad that the Grand Canyon happened which is a pretty good size pit, 200 plus miles long and 5 miles wide and a mile deep.

Yet, what we must consider is preserving our resources the method which will best accomplish that purpose. I think you stated that 50 percent of the coal is left permanently underground by this method of recovery. I wonder, we were searching yesterday for a source of figures—some information from a reliable source. Could you inform us as to where we might be able to get definite information in this regard?

Mr. ROGERS. On the coal?

Senator FANNIN. Yes, on the coal left underground.

Mr. ROGERS. I think the National Coal Association would have that.

Senator FANNIN. We will contact them.

Senator METCALF. They use substantially the same figures, but I asked Mr. Phelps, when he appeared on behalf of the coal mining industry with the American Mining Congress, to provide us with more precise figures and give the source. We will also ask the Bureau of Mines to provide us with figures so we know just exactly how much coal is left in the ground.

And, of course, as you know, Senator, we are opening up a whole new problem here in the West where we have these deep seams that haven't been mined before and how much coal do we leave in a seam 100 feet thick to have an underground mine, I don't know?

Senator FANNIN. Well, this is what I was seeking.

Senator METCALF. We will try to find that and hope the record here will show, and the staff will follow through on getting other materials.

Senator FANNIN. Mr. Rogers, I was not going to impose on you to try to get that information, but I would certainly thank the chairman that that information will be available.

Senator METCALF. It would be helpful to bring it out.

Senator FANNIN. At the bottom paragraph on page 7 of your statement you said that clear legislative directions benefit both public and industry. As with respect to those under consideration, I share your concern with the statement that was made. A bankrupt company isn't going to be of any benefit and it must be allowed to operate at a profit or the continued use of this energy will cease.

So, I am concerned. You talk about the declining reserves of oil and gas being experimental. I am sure that it is your recommendation that as rapidly as possible offshore drilling get started through the different recovery methods presently available.

Do you feel that the royalties that you mentioned for some of the resources which have been pumped, discontinued, or stopped that the prospect of going back in and getting future recoveries feasible?

Mr. ROGERS. You mean from the same wells?

Senator FANNIN. Yes, when the producer has to pay such a high royalty, does this have an effect maximum efficient recovery, or premature shut down?

Mr. ROGERS. Yes, of course.

Senator FANNIN. We have reported 25 or 35 percent of the oil still remaining in wells.

Mr. ROGERS. Of course, there are different depths at which you can get the oil. As a matter of fact, there is a program or project out in the Panhandle Field wherein they are putting gas back into the ground and creating the bottom hole pressure that has leveled those wells off

and continued their production. And, we will say if it is a 20-barrel-a-day well, that it would level that off rather than to have it continually decreasing in production.

I think there are a lot of techniques being worked on in this general area and I think we are going to have to continue.

Senator FANNIN. My question is, Could we have a different type of a royalty program on Federal lands in regard to those wells?

Mr. ROGERS. I see what you mean.

Senator FANNIN. So that we could have every incentive for them to get back to those wells, to have as effective recovery as possible.

Mr. ROGERS. I think that is an excellent suggestion and I think we have recommended several times that some exhaustive research be done in this regard on the royalty program and with regard to not only the on-shore wells, but the off-shore wells, to try to come up with something that will create let's say, additional incentive to go back in there.

As a matter of fact, there is a program out in my old district in the Panhandle where when the Federal Power Commission suspended the regulation of small producers, that the wells drilled that following year went up I think 67 percent. Now, what they were were step-out wells that they couldn't drill before because of the price situation and then the courts came along and the Federal Power Commission didn't have the power to do this, so it created another problem.

Senator FANNIN. Thank you, you have been very helpful.

Mr. ROGERS. Thank you.

Senator METCALF. Senator McClure.

Senator MCCLURE. Thank you very much.

I am particularly glad to see you here today, Mr. Rogers, and I would like to ask you just one question because I don't think your statement dealed with it directly.

There are a number of groups in our country today who are saying that the energy crisis is a contrived paper crisis, that it doesn't really exist. You have started out your statement by saying that the growing inadequacy is a fact, not opinion. Would you care to comment further on that?

Mr. ROGERS. Well, you know, I think the best proof of that are the figures when you are talking about, for instance, confining it to the source of energy that I am primarily interested in, natural gas, which, of course, is the best fuel, the cleanest fuel, the easiest to use. When you are using twice as much as you are adding to the reserves each year, you have no place to go but down.

Now, we had at the present time, approximately 260 trillion cubic feet of gas and were using 23 trillion cubic feet using the 1972 figures. Well, if you use these.

And you add in the increase each year, you are talking about a life of our proven reserves of around 10 years, less than 10 years.

To me it is just there, we are using more than we are adding and some day it is going to run out.

Senator METCALF. Well, I think some of the suggestions have been made that there are ways in which we can cut energy consumption rather than permitting it to increase.

Mr. ROGERS. Senator, I think these were all said, but the trouble about it is that most of the people who talk about wanting to cut energy consumption and want the other fellow to do it and when you weigh this all out, for instance, between 1963 and 1968, the population increased about 11 percent, your energy demands increased over 44 percent. If man is going to continue to demand the better things in life, it is going to require more energy and we would become an energy-dependent nation.

Senator MCCLURE. Thank you very much.

Senator METCALF. Thank you, Senator McClure.

Mr. ROGERS. Thank you, Mr. Chairman.

Senator METCALF. We appreciate your testimony in your venture. Come and see us again.

Mr. ROGERS. Thank you.

[The prepared statement of Mr. Rogers and answers to questions posed by Senator Metcalf follow:]

TESTIMONY OF
WALTER E. ROGERS, PRESIDENT
INDEPENDENT NATURAL GAS ASSOCIATION OF AMERICA
BEFORE THE
SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
HEARINGS ON S. 425, SURFACE MINING LEGISLATION
FRIDAY, MARCH 16, 1973

My name is Walter E. Rogers. I am President of the Independent Natural Gas Association of America (INGAA). This Association is composed of major natural gas transmission companies of the United States and producers and distributors of natural gas.

I am appearing as a representative of the gas segment of the energy industry, and I claim no particular expertise in mining or reclamation. The growing inadequacy of the domestic supply of oil and gas is fact, not opinion. The time lag inherent in development of new and expanding domestic supply capability means that demand for such fuels cannot be satisfied conventionally for many years to come, if at all. Under these circumstances, any restrictions placed on the contribution to supply by other fuels or energy sources will only magnify the problem of dependence on foreign imports.

Coal production represents a substantial part of the nation's energy supply. An adequate energy supply is, in turn, essential to the continued improvement of the quality of life and productivity enjoyed by our people. The quality of the physical environment also has a direct bearing on lifestyle and must be preserved. Therefore, just as sound reclamation practices are

essential to the preservation of the physical environment, a viable coal mining industry is essential to our social and economic well being.

I shall now focus my remarks on the particular significance of coal for future gas supply. Natural gas production in 1972 was almost 23 trillion cubic feet. This was a maximum production effort that nevertheless resulted in curtailments to many major users during the winter months. Without substantial new reserve additions, production capability will decline. By 1985, maximum wellhead deliverability from currently proved reserves will be less than 7 trillion cubic feet. With a continuation of the downward trends in drilling activity and discovery rates, the December 1972 energy study by the National Petroleum Council projected that annual gas production would decline 35 percent by 1985 to approximately 14 trillion cubic feet.

It is highly unlikely that gas supply can be increased rapidly enough to satisfy potential gas demand through the year 1980, even if the increase in demand is calculated at half the rate experienced in the 1960's. In an effort to help ameliorate this situation, the natural gas industry is attempting to supplement wellhead production with projects to import liquefied natural gas (LNG) and to convert naphtha and crude oil to snythetic natural gas. Efforts are also being made to utilize nuclear explosive stimulation technology in areas where conventional well completion techniques have proven inadequate. However, assuming a maximum contribution from sources of gas supply, it may be 1985 or later before supply can overtake demand.

Under such conditions, it is significant that coal represents more than 70 percent of the remaining fossil fuel potential in the United States and that coal can be converted to high BTU, or pipeline quality, gas with available technology. Certainly, an inadequate energy supply condition will be harmful to the public interest. Therefore, the urgency with which coal mines and gas conversion complexes should be developed is apparent.

It had been forecast by the Department of the Interior that 19 million tons of coal might be mined by 1980 for the purpose of conversion to gas. However, events have outpaced the forecast. Two coal gasification project applications have already been filed with the Federal Power Commission (FPC) calling for a total of almost 18 and 1/2 million tons of coal production a year by 1977. These two plants will produce 166 billion cubic feet of high BTU gas each year. This is only a beginning, and it represents less than 1 percent of today's gas production volume.

Other gas companies are in the process of finalizing similar plans and are expected to file soon with the Federal Power Commission for authorization to construct coal gasification plants before 1980. This needed activity will occur if plans to construct such facilities where large coal reserves are known to exist can be pursued without delay. Each plant will require 200 to 300 million tons of nearby reserves and is expected to cost over $400 million. The financing of these plants, which must cover costly preliminary planning, reserve acquisition and engineering analysis and

estimating, cannot be accomplished if access to known coal reserves is hindered through delay and procedural uncertainty. What is needed now is the swift passage of workable reclamation legislation so that the gas suppliers can proceed in their efforts to reduce the otherwise increasing gravity of the energy crisis.

In that regard, we believe there are a few sections of Senate Bill S. 425 that warrant general comment, leaving to those knowledgeable in mining and mined land reclamation the opportunity of commenting on the specifics.

Section 215 (page 36) entitled "DESIGNATION OF LAND AREAS UNSUITABLE FOR SURFACE MINING" authorizes the Secretary of the Interior to "make annual grants to each State for the purpose of assisting in the development of a State land use planning process capable of making objective decisions . . . as to which, if any, land areas of a State are unsuitable for all or certain types of surface mining . . . ." The section further provides that an area may be declared unsuitable for mining if:

(A) Reclamation, as defined in the Act, is not physically or economically possible.

(B) Mining "would be incompatible with . . . essential governmental objectives."

(C) "The area is an area of critical environmental concern."

Subsection (A) above raises the issue of State land zoning in a manner that could result in the wholesale exclusion of coal reserves from consideration for mining for reasons unrelated to reclamation. As defined in Section 212(b) (4) of the Bill (page 27), reclamation requires establishment of a "self-regenerating vegetative cover." Thus, by definition, the arid desert and semi-desert areas prevalent in the Western States could be declared unsuitable for mining because they could not be proven capable of a "self-regenerative vegetative cover" prior to mining. In regard to the question of economics, the coal producer is the one best able to determine whether required reclamation expenses are economically justified in the light of total project costs and potential revenues.

Subsection (B) above would permit any State to set its own "essential governmental objectives." No definitions, descriptions, or statement of objectives are given for the purpose of helping formulate such standards. Absent such criteria, it would appear that a State could set standards that prevent surface mining operations in that State. Physical conditions determine whether coal is mineable by surface or sub-surface methods. Coal at shallow depths is usually not recoverable by underground methods. However, where shallow sub-surface mining is possible, the support pillars that must be left standing result in leaving 50 percent of the coal underground permanently. This cannot be regarded as an efficient conservation practice, particularly in view of the current energy supply situation.

Subsection (C) above would permit any State to prohibit mining in areas of "critical environmental concern." We, of course, favor protection to critical environmental areas. We fear, however, that unless S. 425 sets precise standards, surface mining in areas containing vast amounts of needed coal reserves might be prevented without due regard for public interest considerations.

Section 212(c) (page 30) permits mining thick mineral deposits under special reclamation regulations, but coal is excepted from receiving such permission. The exception as to coal means that mining can be largely excluded from the Powder River Basin of Montana and Wyoming, where a coal seam or seams are 50 to 100 feet thick, because the overburden cannot fill the resulting void. Hence, the area may not be able to be restored to the capability of supporting a use equal to the use possible prior to mining (Sec. 212(c) (1) - page 30). The effect of this provision would appear to prevent mining the largest single coal reserve area in the United States.

Section 206 (page 14) provides for a moratorium on mining operations for one year following the bill's passage. Only very limited exceptions are made. None of the exceptions will cover the mining operations for the two coal gasification plants for which Federal Power Commission filings have already been made. A moratorium can substantially delay the construction of gasification complexes that depend upon the development of coal mines. The prospective uncertainty of the date of passage of the Bill, and

therefore the commencement date of the moratorium would introduce an additional planning impediment. Also, moratoriums quite often result in failure to deal with the difficult issues during the period of inactivity, thereby causing additional delay.

It would also seem that, from the standpoint of minimizing administrative and procedural burdens wherever possible, only the initial Environmental Impact Statement is needed for a mining permit. Rather than imposing an annual environmental statement obligation, it might be more constructive to require supplemental statements only when, and if, the physical or environmental conditions have changed so as to require some specific reconsideration. In that event, the submission should be made as soon as practicable, rather than waiting for the prescribed annual filing date. For this reason, we recommend consideration of a provision that, in effect, grants an exemption from the annual renewal statement filing requirement of the National Environmental Protection Act along the lines suggested.

Clear legislative and regulatory directions benefit both public and industry, particularly when involving such long-term capital intensive operations as those under consideration. The importance of coal to our energy-dependent society requires that any land use policy recognize that a priority among land uses must be contemplated. This is particularly true because of the decline in reserves of oil and gas being experienced.

Comprehensive planning requires that local, regional and national needs -- physical and social -- be served.

Responsible mining industry operations must entail what is essentially a stewardship role having unobscured objectives. Administrative responsibility includes defining those objectives with as much precision as possible and providing those mechanisms designed to assure their attainment in a functional manner.

With the exceptions mentioned above, we commend Senate Bill S. 425. We have concluded that if so modified, it will succeed in closely approaching those standards. We hope that our recommendations serve to assist in the passage of a most timely and important piece of legislation needed to balance both environmental and energy policy consideration.

INGAA,
Washington, D.C., March 29, 1973.

Hon. LEE METCALF,
Committee on Interior and Insular Affairs,
Old Senate Office Building, Washington, D.C.

DEAR SENATOR: During my testimony before the Interior Committee on March 16, 1973, you asked me some questions with reference to the water requirements for a coal gasification project. My answer to you was taken from information that had been filed in support of the El Paso Natural Gas Company coal gasification project in San Juan County, New Mexico.

The estimate for water requirements for that project was 10,000 acre feet per year. You further asked if this was a daily supply of 10,000 acre feet of water, and I answered as follows: "That is right." I had understood your question to ask if that was a yearly supply of 10,000 acre feet of water. This was later corrected when Senator Fannin was recognized for questions. However, I did want to clarify the situation so that the record might reflect that the water requirements for such plant are 10,000 acre feet annually.

I would also advise you in answer to another inquiry you made with relation to whether or not such water would be in whole or in part returned or would be totally consumed. The information that I have on this subject at the present time is that the companies anticipate total consumption of the water. None will be returned to its source.

I enclose with this letter information and data filed with the Federal Power Commission in support of the two coal gasification projects in San Juan County, New Mexico. This data was filed in connection with the applications of the Transwestern Coal Gasification Company and the El Paso Natural Gas Company.

If I can be of any further assistance, please advise me.

Sincerely yours,

WALTER E. ROGERS, *President.*

Enclosures.

EL PASO COAL GASIFICATION PROJECT

Production.—250,000 Mcf per day of synthetic gas.

Name.—Burnham Complex on a 40,287 acre coal lease in the Navajo Tribal Lands in San Juan County, New Mexico.

Target Date.—1976, with full production by 1977.

BTU Content.—972 per standard cubic foot.

Coal Resources.—700 million tons of recoverable sub-bituminous reserves have been established, these are sufficient to support *3* coal gasification complexes of the Burnham size.

Annual Coal Consumption.—8.8 million tons for Burnham.

Cost Item.—$30 million to Consol to exercise option of Navajo lease.

Pressure.—Burnham gas output will be 915 psia.

Estimated Capital Costs.—Burnham Complex coal gasification facilities and related synthetic gas dehydration, compression and pipeline facilities: $353,-180,000.

Capital Cost Mine Facilities.—$67.5 million.

Water Requirements.—700,000 acre feet or 28,250 acre feet per year for 25 years to gasify entire 700 million tons of coal.

For Burnham alone, 250,000 Mcf per day will require 10,000 acre feet of water per year.

Corporate Structure.—Subsidiary company, Mesa Resource Co., will mine; and Fuel Commission Co. will operate Burnham.

Cost.—Cost of SPG to El Paso is estimated at *$1.21 Mcf.*

TRANSWESTERN COAL GASIFICATION CO., ET AL.

TABLE 3-7.—ESTIMATED DISPOSITION OF RIVER WATER

[In gallons per minute]

Description	Atmospheric	Mine disposal	Process: Consumption	Process: Production	Slurry Pond [1]	Available for reuse
Raw water settling pond at river	360					
Raw water holding pond at plant site	60					
Raw water clarifier sludge		30				
Cooling tower (42,000 gpm circulation)	1,760					470
Boiler blowdowns						250
Process boiler blowdowns						190
BFW treating rinses						210
Effluent sludge water		50				
Boiler soot blowing	200					
Domestic water, coal mine [2]		10				90
Domestic water, gasification facility [2]		10				90
Utility water, gasification facility						100
Stack gas SO_2 removal	40					
Stack gas SO_2 removal (retained with solids)					20	
Treated waste water						420
Waste water from rectisol unit						220
Production of CH and Cl_2			1,120			
Process condensate, methanation unit				(565)		
Process condensate, NH_3 incineration				(35)		
Total from river 5,100 gpm=Σ	2,420	100	1,120	(600)	20	2,040
Disposition of the available for reuse water:						
Boiler ash (mine disposal)		27				
Gasifier ash (mine disposal)	146	281				
Gasifier ash mud (mine disposal)		16				
Mine road water	718					
Other mine uses	580					
Sulfur product pelletizer	250					
Evaporation	22					
Total 2,040 gpm=Σ	1,716	324				

[1] Lined settling pond.

[2] Via activated sludge processing.

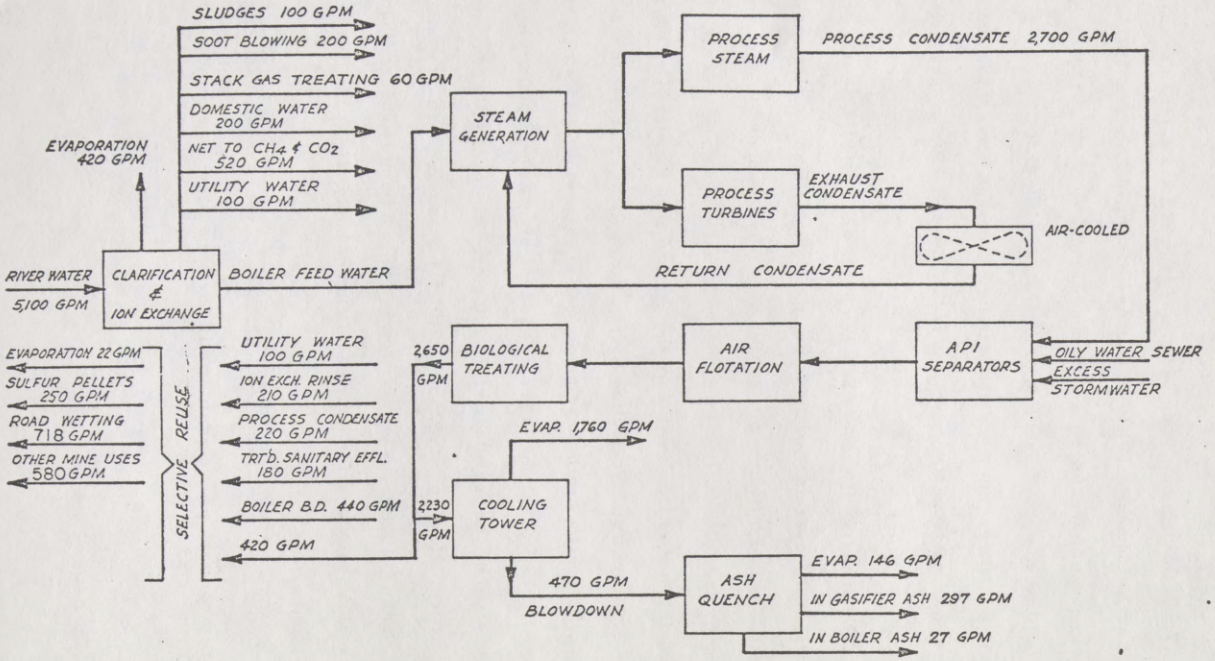

FIGURE 3.4. PROCESS WATER USAGE AND DISPOSITION

INDEPENDENT NATURAL GAS ASSOCIATION OF AMERICA
COMMENTS RE S. 923 AND S. 1163

The following comments pertaining to S. 923 and S. 1163 are made on behalf of the Independent Natural Gas Association of America (INGAA) pursuant to the request of Senator Metcalf at the hearings on S. 425 held March 16, 1973. Before proceeding, I should like to emphasize again that I have no particular expertise in either mining or reclamation. Consequently, these are simply general comments on a few sections of S. 923 and S. 1163 as they relate to my comments on S. 425.

The primary differences between S. 923 and S. 1163, are that the former authorizes the Secretary of the Interior to formulate and implement the broad standards called for in the bill so that they may be applied to all forms of mining by open pit, surface or underground techniques, whereas S. 1163 calls for formulation and implementation of the performance standards by the Administrator of the Environmental Protection Agency for application solely to the strip mining of coal. Contrasted with these provisions are those of S. 425 which relate to surface mining operations in general and the standards of the bill are to be implemented by the Secretary of the Interior. All three bills have striking similarities. However, S. 923 is considerably broader than either S. 425 or S. 1163, since it goes more to the regulation of mining in general than stopping after making provision for the reclamation of lands affected by surface or strip mining.

In my written testimony on S. 425, (Test. p. 6) I pointed out certain problems with regard to the provision in the bill for a moratorium on surface mining

operations for one year following enactment of the bill. There are no specific moratoria requirements in either S. 923 or S. 1163, but S. 923 requires a permit be obtained by mining operators prior to the commencement of mining operations, and such a permit is not to be issued by the State agency until the operator, "(i) files a mining and reclamation plan describing the manner in which his reclamation activity will be conducted showing that such activity will be conducted in a manner consistent with the regulations and (ii) establishes to the satisfaction of the State agency that the operator has the physical and financial capacity to conduct his mining and reclamation activity in accordance with the reclamation plan. . . ." (S. 923, Sec. 201(a)(1)). With regard to operations in being on the date of the Secretary's approval of the regulations, the operators must obtain permits within one year of the Secretary's approval of the State regulations, but the permit may allow two years from the date of the Secretary's approval for the operators to bring their operations into compliance with the performance standards adopted (S. 923, Sec. 201(a)(2)). In the case of operations which produce less than ten thousand tons per year of mine run material, five years may be allowed for the operators of such projects to bring them into compliance with the standards. (Id.) In contrast, S. 1163, Sec. 101(b) merely notes that, "On and after two hundred and seventy days from the enactment of this Act, no person shall engage in or carry out any activity involving the extraction of coal from a surface mine subject to the provisions of this Act by surface mining methods, unless such person has first obtained a permit issued in accordance with the provisions of this Act." Though our comments relative to the moratoria

provisions contained in S. 425 would remain the same after analysing S. 923 and S. 1163, we would recommend that the provisions of S. 923 be reviewed with regard to the possibility of adding more time flexibility to the permit requirements of S. 425.

With regard to both S. 923 and S. 1163, I would reemphasize my statement on S. 425, relative to the necessity for minimizing administrative and procedural burdens, (Test. p. 7). Both of these bills provide for extensive reporting and review procedures ranging from the formulation of Federal Standards; the approval of State enacted regulations implementing the Federal standards; the Federal monitoring of the State programs; Federal advisory groups from other Federal agencies; the State/Federal monitoring of the mining reclamation operations; and, the periodic reports required of the operators (See S. 923, Title II, Sec. 201(a)(9), (10), (14), (c), (e), and Sec. 205; S. 1163, Title I, Sec. 108, Sec. 202(a)(2)(A)). A lower frequency of reports, even to the point of exempting operators from certain reporting under the National Environmental Protection Act, will place the operators in a position whereby efficiency can be maximized.

The provisions in both S. 923, Sec. 210 and S. 1163, Sec. 205, for grants to assist the States in the administration of the program are basically the same. Neither bill contains a provision comparable to S. 425, Sec. 215, which could allow the exclusion of coal reserves from consideration for mining for reasons unrelated to reclamation. Therefore, our comments relative to S. 425 stand on their own in sole regard to that bill (Test. p. 4).

It should be further noted with regard to my comment on Sec. 212(b) of S. 425 (Test., p. 5), that I was critical with regard to reclamation under S. 425 calling for the requirement of "self-regenerating vegetative cover" (S. 425, Sec. 212(b)(4)), since arid desert and semi-desert areas could be declared unsuitable for mining because they could not be proven capable of supporting such a cover (Test., p. 5). The same criticism cannot be made with regard to S. 923, Sec. 201(a)(8) which provides that:

> ". . . the responsible State agency will identify areas or types of areas in the State which, if mined, cannot be reclaimed with existing techniques to satisfy applicable performance standards adopted by the Secretary, and the State agency will not issue permits to mine such areas until it determines that the technology is available to satisfy applicable performance standards."

However, this provision is subject to the same general comment as was made with regard to S. 425, Title I, Sec. 215, Subsec. (c). There are no precise standards set forth in the bill. We believe such standards should be included in the bill in order to insure that needed coal reserves will be allowed into the market after appropriate consideration of the public interest.

In addition, S. 923, Sec. 201(b)(2) states that, "The criteria set forth in subsection (a) of this section shall be further elaborated by the Secretary through guidelines which will be issued within ninety days after enactment of this Act and revised periodically as the Secretary deems appropriate." Comparable provisions are set forth in Sec. 201(b)(3), (4), and (5); and, in S. 1163, Sec. 102 and Title II, Sec. 201. Such vagueness can only promote uncertainty which leads to time lags in the development of energy supplies. Therefore, we would recommend that the standards be made definite in the legislation enacted.

Senator METCALF. The next two witnesses I understand are going to appear together and I will call on Senator Fannin to introduce them.

Senator FANNIN. Thank you, Mr. Chairman.

We have Mr. Richardson, the president of the Arizona Mining Association, and Dean William Dresher, College of Mining at the University of Arizona, if they would come forward.

We are very pleased to have these two gentlemen with us this morning. We have two very fine leaders from the State of Arizona, Mr. Richardson, the president of Arizona Mining Association. We are very proud of our mining association in Arizona; it has been very successful and diligent in their activities in regard to the work in which we are presently involved.

Dean Dresher of the College of Mining of the University of Arizona directs one of the finest schools of mining in the United States. We will start an argument here, we are very proud of our school and I will stand on that statement. The work the school has done is recognized throughout the country. Idaho and Montana are proud of their schools too, but we have been very successful in many research developments. Of course, since Arizona produces over half of the copper in the United States, it can be said that there has been considerable success. We are very pleased to have these gentlemen with us who are involved not only in mining, but very active in mine safety and other programs such as reclamation. We are very pleased to have you with us today.

I don't know which of you two gentlemen would like to start, Mr. Richardson?

STATEMENT OF J. K. RICHARDSON, PRESIDENT, ARIZONA MINING ASSOCIATION; AND DEAN WILLIAM DRESHER, COLLEGE OF MINING, UNIVERSITY OF ARIZONA

Mr. RICHARDSON. Mr. Chairman and members of the committee, my name is James K. Richardson. I don't happen to be so much involved in the university over here, but I am the president of the Arizona Mining Association. I am a mining engineer, having received a B.S. in Mine Engineering in 1932 from the Missouri School of Mines; an Engineer of Mines degree from the same institution in 1935; and a Doctor of Engineers degree from Michigan Technological University in 1969.

With the exception of 4 years spent in the Armed Forces, my entire working life has been within the mining industry. The positions I have filled during this period run the gamut from underground mucker to vice president of one of the largest underground copper producers in the United States, which position I occupied prior to coming to Arizona in October last year.

My experience in the industry has given me the opportunity to work, intimately, on problems in some of the largest underground and open pit mines in the United States. In 1951, I was loaned to the Defense Minerals Administration by my then employer to serve as Chief of the Copper Branch.

As such, I had the responsibility of studying and recommending the feasibility of new copper production projects, the development of which would enhance this Nation's copper ready availability for defense needs.

Senator METCALF. Mr. Richardson, what company are you presently associated with?

Mr. RICHARDSON. I am not associated with any company at the present time. I am a full-time president.

Senator METCALF. Are you on leave from a company?

Mr. RICHARDSON. No, sir, I am not. I recently retired. Prior to that time, the Mining Association in Arizona had an operator who was the president. Operating demands, administrative demands just became too great, and so they brought me in as president of the association.

Senator METCALF. Thank you. I am glad that in Montana quite properly, the Anaconda Co., quite dominates the Montana Mining Association. But they hardly ever have a member on their staff that is president or executive secretary, and I know that the other member companies, in both Montana and Arizona, are very much concerned and interested in having a skilled full-time representative. And I can congratulate you on that opportunity to represent the company in that capacity.

Mr. RICHARDSON. Thank you, Mr. Chairman.

I am speaking today on behalf of the Arizona Mining Association. Our 13 member companies produce, from their Arizona operations, more copper than is produced by all of the other 49 States combined or by any other country in the free world. Their production of other vital metals as byproducts of their copper operations is such that Arizona's rank among metal producing States is No. 2 in molybdenum; No. 3 in silver; and No. 4 in gold. Arizona is generally conceded by mining authorities to constitute the nonferrous metals "treasure trove" of this Nation.

We speak, therefore, with some authority for a most significant portion of this Nation's nonferrous metals production. Some 83 percent of this production accrues from open pit mines and 15 percent from underground planned caving. Both of these type operations could be adversely affected by the enactment of S. 425 "Surface Mining Reclamation Act of 1973," which would by many of its terms force their closure.

The chief reason why this bill would have such a catastrophic effect, in my opinion, stems from its basic conceptual framework. Although the bill would be applied to mining for all minerals—not just coal—and to all surface mining—not just strip mining—it is clearly written with coal strip mining foremost in mind. Even where different provisions have been inserted for other types of mining, this has been done without full comprehension of the enormous differences which can, and generally do, exist between conventional strip mining for coal and open pit mining, as practiced, for copper.

One of the banes of our existence in Arizona is the common confusion in the public's mind of strip mining with open pit mining. Every Arizona mining man of my acquaintance bridles when a newcomer refers to our great copper properties at Ajo, Morenci, Sierrita, Twin Buttes, Inspiration, Mission and so on, as "strip mines." It isn't that we have anything but the highest regard for our colleagues, in the coal mining industry, but it just isn't a factual reference.

Robert Peele, as early as 1927, in his "Mining Engineers' Handbook" pointed out that strip mining involved "stripping and mining deposits of large areas and tonnage, which are fairly uniform in character and lie near the surface."

Thus, strip mines are normally relatively shallow, transient, "one-pass" affairs that strip off the overburden, remove the desired material, and backfill the opening in one continuum. The operation may mine a bedding deposit over a significant area, both as to length and width. Our open pit mines are significantly different and cannot be equated in such a concept.

I have a great respect for the results responsible strip mining operators are obtaining in matters of land reclamation and restoration. They have created, in many instances, vastly improved agricultural and recreational areas. Despite adversities, they have nobly responded to the public's requirement for more and more energy fuels. But what works for the strip mining operators may be totally inappropriate for open pit operations, because of this total lack of similarity.

An open pit copper mine must be envisioned as an operation that is going to continue for decades in the same relatively restricted area. Without such concept, it would be totally infeasible to develop it initially. It is not simply a matter of making an incision, removing the ore in a matter of days, weeks or months, then closing the incision so as to leave the minimum scar.

The intial difference between a potential open pit copper mine and a strip coal mine lies in the extreme rarity of areas of economic copper mineralization susceptible to open pit mining operations. For example, despite Arizona's world leadership in copper production, all of the land area of the State, and the development of new mines in future years is not expected to change that figure to any marked degree.

An open pit operation, then, plans to mine a very large volume of rock, over a long period of time, in a relatively limited area. The ore body itself could be 1,500 feet or more in thickness and it is, ordinarily, extremely irregular. The ultimate pit surface limits are largely determined on the basis of safety of employees and maximum extraction of the defined ore body.

The mining problem, therefore, becomes one of finding a means by which a 2,000-foot excavation can be safely and economically made within the restricted area available.

Literally millions of tons of earth must be moved, most of which contains little or no copper mineralization, in order to reach the ore body, whose copper content, for example, may be 0.6 percent copper ore, you must also mine, on the average, 2 tons of barren waste. Therefore, each ton of material you mine and transport averages 0.2-percent copper—or 4 pounds per ton mined. If technology permitted 100 percent recovery, which it does not, you would be getting at today's prices about $2.40 for each ton handled.

The mining of such a low grade of ore requires mass production methods and economies of scale, and the amount of material which can be treated as ore varies inversely to the costs of mining. As costs rise, lower grade ore can become waste.

Obviously, gentlemen, the capital investment in such an operation is huge. No one thinks, today, of developing an open pit mine for less

than a $100 million initial investment, and the usual outlay—before a single dollar is returned—often is two or three times this amount. No major development can be financed unless there is assurance that it can operate in the same location for a long enough period to liquidate this investment. Actual experience indicates that the typical open pit operation has a productive life measured in decades.

The points I wish to make are that (1) open pit mining is not transient; (2) its life is measured in decades; (3) the maximum perimeter of the pit can be predicted within reasonable parameters and is limited in size; and (4) the land required for solid waste disposal and ancilliary facilities is definable and limited.

Open pit mining must be viewed more as a permanent, than temporary, land use, and I cannot think of a single Arizona open pit that does not constitute by far the highest use of the land, in terms of the benefits derived from it.

Reclamation of solid waste disposal areas have, under some circumstances, proven feasible. The nature and degree of possible reclamation varies from operation to operation, depending, largely, upon the material originally moved and activity of the area during the life cycle of the operation.

The pit area itself, however, is a different matter. Backfilling and restoring to original contour, as may be required by this bill, is physically and economically impossible. Moreover, such backfilling would constitute an irrevocable commitment to abandon future mining in the area. Remaining mineralization, uneconomical by today's standards, may be lost for the future and thus constitute a flagrant waste of our Nation's natural resources. Price technology establishes value cutoffs that change from year to year. Today's waste may well be tomorrow's copper source.

Even if it were possible to make such restoration, such effort would be nonproductive, and the energy required to put our unused rock back into the excavation would be totally wasted, because no subsequent use could possibly justify such enormous expenditure of critical human skills and energy fuels.

These open pits, if ever abandoned, will, more quickly than most people realize, be reclaimed by nature and melded again into the landscape which already includes by nature's design a vast panoply of variegated valleys, canyons, mountains, and buttes. This is not to say that, when mining ends, pits should not be left in such condition as to be safe for visitors and ready for God's handiwork.

Gentlemen, my message today is concerned not so much with details of S. 425 as with the concept of the tremendous differences which exist between strip mining and open pit, hard-rock, mining.

I am aware that the bill, as written, tries to recognize those differences and allow for them, but in my estimation, it does not adequately do so.

The detailed discussion of S. 425 has been admirably handled by those testifying for the American Mining Congress and the Arizona Mining Association endorses their position. Let me emphasize, however, that in my opinion the bill as presently drafted would close every open pit mine in Arizona.

I would be remiss in my responsibilities to you gentlemen if I neglected to point out another area of real concern in addition to the vast

difference between open pit and strip mining. As our Nation's need for copper grows, and as exploration techniques are improved to give man greater knowledge of mineralization under deeper cover, underground mining employing planned caving techniques, such as block caving, will play an increasingly prominent part.

A major producer in Arizona is currently mining a deep-seated copper ore body by this method where blocks of ground are undercut and planned caving takes place due to the weight of the block. This naturally may result in subsidence on the surface, but it provides an economical and safe method of extracting these deep seated, low-grade ore bodies.

This method of mining is sometimes described as open pit mining, starting from the bottom first. If it is to be covered by legislation, it should be treated similarly with open pits, for its problems and reclamation possibilities are generally the same.

I would further call to your attention that this association in earlier testimony before this body has tried to make two points which we most emphatically hold to be valid.

First, that Congress should not wittingly or unwittingly abdicate its legislative power to the executive branch by vesting in the Secretary of the Interior, whoever he may be, vast discretionary powers.

Second, the policy of the United States, as expressly stated in the Mining and Mineral Policy Act of 1970, is to foster and encourage a prosperous, viable, domestic mining industry.

Inherent in legislation such as that being considered today are such potential devastating effects upon our balance of payments, our defense capabilities, our standard of living, and our international relations that we must proceed with utmost thoroughness in exploring all facets of any legislation dealing with so essential a matter as mining.

In closing, gentlemen, I convey to this committee an invitation which we have extended in the past. Come to Arizona and see for yourselves what I have been talking about. We will show you all aspects of open pit and planned block caving operations. We believe you will find the time thus spent agreeable, profitable, and helpful in your deliberations.

I am, personally, grateful to you for your consideration and this opportunity to express these views.

Senator METCALF. Thank you very much.

Senator FANNIN. Let's call on Dean Dresher, and then have interrogation relative to Arizona at the same time.

Dr. DRESHER. Thank you, Mr. Chairman. I want to thank Senator Fannin for the very kind comments he made about our college. I am very pleased to be associated with it.

Senator METCALF. Senator McClure and I would like to indicate that we completely concur in all the fine comments, but we may have a little bit different rating of priorities.

Dr. DRESHER. I am fully aware of your fine institutions also in their contacts with my counterparts in those institutes.

Senator METCALF. Thank you, very much, Dean Dresher. We are glad to have you with us. We are looking forward to your testimony.

Dr. DRESHER. Mr. Chairman and members of the committee, I am Dr. William H. Dresher, dean of the College of Mines of the University of Arizona.

I am a metallurgical engineer by profession and have worked for 15 years in the mining and metallurgical division of a major U.S. chemical company before assuming my present academic post. I am here on my own behalf to comment on Senate bill 425, "The Surface Mining Act of 1973." My State has a strong interest in surface mining because it annually produces more than 50 percent of the Nation's copper and is one of the Nation's leading hard rock mining States.

Mr. Chairman, I am sure that you and the members of the committee are thoroughly acquainted with the precarious position of our Nation today relative to the supply of energy and mineral resources required to sustain our Nation's economy.

The first annual report of the Secretary of the Interior, under the Mining and Minerals Policy Act of 1970, issued just 1 year ago, contains a grim warning of this position. Briefly, the Secretary's report reveals that the development of the mineral resources of the United States is failing to keep pace with its rapidly expanding economy to the extent that there is an alarming increase in our dependency on foreign sources for essential energy and mineral needs. A deficit in the balance of payments of $2 billion in 1950 grew to $8.6 billion in 1970 and is projected to rise to $64 billion by the year 2000.

Recent and possible future devaluation of the dollar in overseas markets will sharply intensify this situation to the extent that our national security could become jeopardized and the energy and material requirements of our populace will be difficult, if not impossible, to meet.

Mr. Chairman, the difficulty I see before us is the lack of any clear-cut national goal, policy or commitment which will guide us into the next century and which will meld our environmental goals with our material goals to yield the quality of life and the security we all desire.

Recognition of the environmental and societal imperatives has come upon us too rapidly for sound integration into our economy. We are now contemplating taking stringent and positive steps in the environmental direction, in this bill and in others, without full consideration of the measures required to assure the fulfillment of our energy and material needs.

The Nation's energy resources in particular are required to solve our larger environmental problems of air and water pollution as well as scrap recovery and recyling. Measures restricting mined mineral fuel production would be detrimental to these important national efforts.

Last spring I participated in a series of university forums held by the National Materials Policy Commission for the purpose of examining the position to be taken by the Federal Government in dealing with the material, energy, and environmental needs of our country. The real questions to be answered as revealed by the Forums, are: "How much production is needed?" and "How much protection is needed?"

Without the carefully derived answers to these questions we may find ourselvese far askew of our ultimate goals. The former Secretary of Commerce, the Honorable Peter G. Peterson, summed up our dilemma very well when, in a speech on this subject last September, he said:

> What is clear to me in all of this is that we must do a far better job of forecasting the future costs of today's decisions.

Mr. Chairman, some mechanism must be found to conduct an assessment of the total impact of any steps contemplated in the interests of fulfilling the broad intent of either the National Environmental Policy Act of 1969, Public Law 91–190, or the Mining and Minerals Policy Act of 1970, Public Law 91–631.

Until this is accomplished, we will be on a collision course with our economic systems of business, industry and technology and our long-term concern for the environment. The result could greatly weaken our Nation and its people and, in the end, none of our goals would be accomplished.

Mr. Chairman, you have heard from people who are far more expert than am I in predicting the adverse impact of the Surface Mining Act of 1970 on our Nation, its people, and its industry.

We are all aware of the manner in which the land and its people have been abused in the interest of the extraction of minerals in certain areas of our country, and most of us are in agreement that measures must be taken against repetition of such abuses.

We are, I am sure, disputing differences in "degrees," not in "kind" in many parts of the bill before us; however, there are certain parts of the bill which, if the bill were enacted, would inflict an unnecessary hardship on the mine operators and their employees, the States involved, and, ultimately, on the Nation.

In this context, Mr. Chairman, I refer to the failure of the bill to recognize adequately the very real difference between the two main types of surface mining—strip mining and open-pit mining. In a different frame of reference, a strip mine can be likened to a sprawling urban suburb, continuing for miles in the removal of shallow, well-defined beds of mineral.

An open-pit mine, however, can be likened to a high-rise apartment building—both are to some people an eyesore, but to others, an engineering marvel—but, nonetheless, both are confined to a single area.

A strip mine is dynamic with but a brief operation at any one location. An open-pit mine is often worked for many decades and may sequentially provide employment for two to three generations of people. Father, son, and even grandson have worked in the great mines of Bingham, Utah; Butte, Mont.; and Ajo, Ariz. Some mines now in existence in Arizona have a life expectancy of 50 or more additional years of operation.

Because of the gradation of values in the rock of most metal mines and the everchanging value of the ore due to world price changes and to technology improvements, an open-pit mine is seldom regarded as being "mined out."

Some mines are already in their second stage of development. These have progressed from underground workings of high-grade ore to open-pit workings of low-grade ore. This transition was made possible by the development of technology to the point that moving large tonnages, as much as 80,000 tons of earth per day, became economically feasible.

Thus, while the once great copper mine at Jerome, Ariz., is closed and that at Bisbee, Ariz., is the process of being closed, these mines cannot be considered to be "mined out."

As economics or technology changes they may very well support large mining operations in the future. Restoration of the land contour of these mines to the degree required by Senate bill 425 would forever seal off mineral resources which would be lost to future generations of Americans.

A mineral deposit must be regarded as part of the fragile environment for, once mined out or carelessly blocked from future access, these minerals will be gone forever. Provisions must be made in a mined area restoration act which clearly differentiate in the treatment of open-pit mines form that required of strip mines.

My colleague from Arizona, Dr. Perry, yesterday pointed to the very real differences in soil between the East and the West. And I believe this is one very good example of the difficulties in the restoration of land.

Mr. Chairman, until now I have not discussed the economics of land use and the position of mining in this respect. As an example, in Arizona, where mineral production placed over $1 billion into the State and national economy last year, mining occupies less than two-tenths of 1 percent of the State's total land area—most of this mining was by surface mining methods.

Within that area, the income from mining amounted to over $8,000 per acre last year and, of this, over $1,500 per acre went to wages. By contrast, cattle grazing, the State's largest land user, at 55 percent, yields but $7.50 per acre. Crop raising has an annual yield of a little more than $230 per acre.

But perhaps more important, although the total personal income contributed from agricultural use of Arizona land has been a little more than the contribution from the State's mineral industry, agriculture has required 350 times as much land to achieve this income.

It would seem that the hardship caused by the restrictions imposed on surface mining by Senate bill 425 are totally out of proportion to the small amount of land disturbed and the great benefits derived by surface mining in a hard rock mining state like Arizona.

Mr. Chairman, in summary I would like to recommend that the Congress apply its efforts toward the establishment of a policy which will integrate our environmental needs with our material needs and suspend consideration of such bills as Senate bill 425 until such time that the consequences of environmentally dictated legislation can be assessed in terms of the total national effort.

The proposed Surface Mining Reclamation Act of 1973 is totally at odds with the provisions of the Mining and Minerals Policy Act of 1970. Our Nation's security and the quality of life of its people are far more fragile than the disturbance of the small fraction of the Nation's land area which is occupied by mining, and far more irreversible.

Legislation should be enacted to provide the incentive for creative and constructive treatment of our Nation's problems and not be solely aimed at punitive measures placed upon those who cannot respond to awkward and economically impossible restrictions. Our Nation's mineral industry is a national resource—a major contributor to our gross national product and to our security. If our future as a people and as a Nation is to be assured, it cannot be allowed to falter.

I thank you, Mr. Chairman, for this opportunity to speak on this very important subject.

Senator METCALF. Senator Fannin.

Senator FANNIN. Thank you, Mr. Chairman. I extend my appreciation to both you gentlemen.

I would like to discuss with you the difference between the open pit and strip mines, and the evidence we have in Arizona as to just what has taken place.

The Lavender Pit Mine at Bisbee, is a good example. I feel that if nature had developed the bed it would be one of the wonders that people would want to see, as many thousands of visitors now do travel along that highway. The Mining Co. has made it possible for them to drive into an area where they can view the pit. It is just one of the great sights, I think, in the area.

Rather than disturbing the land, if you look around that area, this is one of the highlights of the area.

Mr. RICHARDSON. I agree, sir.

Senator FANNIN. I feel we should emphasize that to a much greater extent than we do, because we have many wonders in our State, and we certainly can look at that with pride, rather than to apologize for it. This has been a great contribution to the economy of that area, of that State, and to the Nation.

In this regard, we are talking about open pit mining. What has been done by the mining companies in Arizona? I know that there has been considerable work, but what has been done in regard to reclamation activities?

Mr. RICHARDSON. Senator, probably the most aggressive area in this has been south of Tucson, Ariz., where certain of the operations there have made very real efforts to improve the waste disposal areas, and to blend them into the landscape.

These have been replanted, revegetated, and the cost of this is an annual cost around $4,000 an acre in that area. We have to sprinkle these, at the present time, due to the water situation down there, as you are well aware.

It has been, in some instances, very successful and it has blended into the landscape in a very—but these have been mostly on tailings disposals.

Senator FANNIN. I have observed that operation; it is commendable, especially with our arid lands. Perhaps that area is now in a better condition than some of the adjoining areas.

Mr. RICHARDSON. I am sure that it certainly has a better appearance, in general, but as you are well aware, Senator, the water shortage problem, and this has all got to be sprinkled and there has to be evaporation.

Senator FANNIN. But to the extent posible, you certainly have almost performed a miracle.

Mr. RICHARDSON. We have done this, Senator, without any environmental pressures.

Senator FANNIN. It was voluntarily done before the EPA was organized. I certainly am proud, because we know that in an arid country it is not easy to do.

Of course, you state the open pit mines must be envisioned as an operation that is going to continue for decades in the same relatively constricted area. I think the point was more that if if backfill were required to any extent it would be placing a burden upon the future.

But at the present time, as I understand, ore is being recovered that just a few years ago was of such low grade that was considered otherwise economic. Is that true?

Mr. RICHARDSON. Exactly correct, sir. You refered to the Lavender Pit a moment ago, this pit started in 1954 and yesterday, or Thursday I guess it was, I got some figures that they have produced from these some 364 million tons of material and will finish up this somewhere along toward the end of this year. This particular property has produced about 1,881,000 pounds of copper, which provided $25.4 billion in taxes to the State counties and subdivisions thereof, and $76 million in wages and fringe benefits. To backfill this particular pit would cost about $100 million that was not contemplated in the original mining cost. It would have completely changed the economics of mining this particular property.

Senator FANNIN. It is possible that that $100 million could be spent now and additional millions at a later date in trying to efficiently recover an even lower grade?

Mr. RICHARDSON. Certainly, this is the whole thing. I think it makes the industry less viable and less financially appealing to the investment dollar.

Senator FANNIN. Dean, you've made two very fine contributions to these hearings, clarifying some of the problems we have discussed extensively. Specifically, the balance of payments and reclamation issues. It is almost taken for granted that we cannot let ourselves become more dependent on imports, since the strategic and financial security of this Nation is affected. The security and safety of the country is important, but so is the economy.

We are now in jeopardy, with an imbalance of trade around $7 billion. I think you gave certain estimates amounting to $64 million by the year 2000. Is that projection for both petroleum and hard minerals?

Dr. DRESHER. Yes, sir.

Senator FANNIN. Well, that is something that we can foresee. I ask most of the manufacturing, petroleum, and mining industry people how we could ever offset the exports. High technology that is no longer an exclusive to this country. We have many other problems which are a result of our assistance to other countries. Minimal work has been done but at the same time recognition should be given to what has happened.

I think your comments on page 2 are certainly commendable, wherein you say "Lack of any recognizable goal, a policy, or method which will guide us in the next century, which will meld our environmental goals, where our material goals are to yield the quality of life and the security we all desire."

If we go too far in the direction you pointed out, we could be in serious difficulty. I am very pleased that you made that statement; it is one I think can be readily used in a very concise way, indicating just what is faced for the future.

We talk about how much production and protection is needed for the future. These are items that must be evaluated in considering what will be the problem in the years ahead.

Now, have you considered S. 923 in your research.

Dr. DRESHER. I have looked through it and in my comments and thoughts, I intended to not try to get down to the issues which the

individual companies would dwell on, as to how it might affect them. I feel that it has some of the same disadvantages as S. 425, in that it deals with all types of surface mining.

In a very similar manner, it doesn't give sufficient differentiation to be handled, because it has the same objections which I called to your attention in my prepared speech. Now, I think everyone agrees that it is a softer bill than S. 425, but I don't think it really hits it where it should be.

We have problems in the mining industry, and I think we all know it, and if legislation is to be enacted I think it should be specifically aimed at the particular problems and not spread out all over the whole industry.

I think it is important to realize too, and a radio commentator, at least, in Tucson, the other day pointed out that is one of the reasons we are having high prices. And a third was a shortage of fertilizer. While people don't realize that fertilizer comes from mines and metal commodities, phosphate mines in particular, which will also be affected by these bills.

So, we are tied in very tightly there, and one of the reasons we have been able to be so successful in agriculture is that we have had ample fertilizer. Agriculture, as I am sure you know, it is one of the nine States that produce products of which we have a surplus, a balance of payments.

Senator FANNIN. Yes, we do have testimony in that regard, and I agree with you that the mining industry is closely tied to the most arid lands in our Nation.

Mr. Richardson, have you had an opportunity to look over S. 923?

Mr. RICHARDSON. About as casually as Dr. Dresher. I think I could concur in the remarks that he has made.

Senator FANNIN. If you gentlemen have the opportunity and could take the time, I would be most appreciative if you could send us some additional comments. The record will be held open.

Senator METCALF. Despite the statement of the witnesses that there should be no bill unless it is punitive legislation, there is a great urgency, as we all know, for the consideration of these bills. So, we would like to have the record complete for the benefit of our colleagues as soon as possible. However, I am going to held the record open for 10 days after today for the submission of further testimony, and further statements. I hope that the people we have asked over the course of the days of these hearings will be able to examine the bills before us and give us further comments in aid of the testimony that has already been presented or the statements that have been made.

Mr. RICHARDSON. What is the number of this bill?

Senator METCALF. This bill is S. 425 and S. 923. These are the two principal bills that we are considering.

S. 425 was introduced by the chairman of the committee and several cosponsors. S. 923 is a bill that was submitted by the administration, with a special message, and introduced by Senator Jackson and Senator Fannin, as the two ranking members of this committee. Both bills are going to be given every consideration. The subject matter of both bills is going to be compared, and, as far as this Senator is concerned, there are some good sections in S. 923 that I would like to incorporate in the final legislation that emanates from this committee.

Mr. RICHARDSON. I will certainly present a statement.

Senator METCALF. Just send it in to the chairman of the committee or send it to the committee and it will be handled by the staff.

Senator FANNIN. I appreciate very much the testimony you have given. You have stated very succinctly that you recognize the state of the past, but you don't want the mistakes of the past to promote mistakes of the future. Thank you kindly.

Senator METCALF. Senator McClure.

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

I think the last colloquy between yourself and the witnesses would indicate one of the directions that I was going to question.

Because on page 7 of your statement, Mr. Richardson, you indicate that the passage of the legislation will cause the closure of pit mining in Arizona. I think we need something a little bit more specific about exactly what you mean, rather than just a general statement.

Mr. RICHARDSON. Would you read back my comment on that, Senator?

Senator MCCLURE. Certainly.

Mr. RICHARDSON. At this particular point there are a number of items, for example, access roads, I don't know of any open pit mine that does not operate within these limits. The actual replacing contour backfilling, in my estimation, sir, would make this an impossible situation, economically, for the property to continue operation.

I can't think of any mining company today that has the economic ability, financial ability, if you please, to bond itself. I can't imagine where this money would stem from, and sir, I don't really believe—I don't know where they could get bonded at the present time to that extent. But if it were considered in the initial mining of this, as it will be in the future, for example, these unknown costs, I think, would almost make it impossible to determine the feasibility of a mining operation in that sense. Because they are so indefinite.

You have to throw those costs in and say, well we can mine twenty-five one-hundredths of a percent, or three-tenths. One of the, in my particular example here, I gave six-tenths of 1 percent as the ore body. This was purely an example. I think that the Department of Mineral Resources of the State of Arizona, recently published some figures that in 1970, I believe it was, that the average ore grade for the open pits in Arizona, in that particular year, was 0.454 percent. This means about 9.8 pounds per ton were taken out.

Senator MCCLURE. I think you mentioned three specifically. One with regards to roads, which I think we recognize as a problem of definition in the bill. The other was with regard to the backfilling and restoration contour. I think all of us on the committee at least recognize this as being a problem with respect to the pit.

I think the other point was financial capacity or bonding capacity. The latter one, I confess, is a difficult one to really put a price tag on, because we have no experience at all with it at this time.

But, certainly, if we do impose restrictions by way of legislation that increase the cost of operations, it will be reflected in costs if the ore pits were closed. Now, if it reflects in prior cost of the product, then the finanical capacity will be reflected in a higher price.

Mr. RICHARDSON. Senator, this industry, within my experience, has always been a world that is very cyclical because of world prices,

world-marketable material. I can cite some other examples here, and I would like to continue. I did make a rather thorough study of this particular bill.

Senator McCLURE. I wonder, Mr. Richardson, that if instead of doing that, if you would just summarize your specific points and provide them to us for the record.

Mr. RICHARDSON. All right, sir.

Senator McCLURE. Because I think it would help us in drafting the legislation. I think that is the point I would like to make with each of you gentlemen. Because you have indicated that the passage of the legislation may have dire consequences, and there have been other witnesses who suggest that we shouldn't pass any legislation, and I think probably the realities of the situation are not whether or not we are going to pass legislation, but what kind of legislation we are going to pass.

I think there will be legislation, and personally I favor—I am very concerned that whatever legislation we do pass does not have unrealistic restrictions that will indeed cause the minerals industry to be abandoned within this country.

Mr. RICHARDSON. May I? As best I can, from what I have told you here this morning, I would say that what I have tried to bring to your attention is that any bill that does evolve here must recognize that they are long range, that there is this vast difference between open pit and strip mining. That the cost of restoring to original contours the permanent system that this bill calls for, does not really give long enough periods of time for a man to make a realistic appraisal from the concept of exploration, going even from exploration and to the development of the operation.

I can't make an unqualified statement, but very few have the properties that, I think, the 5-year period is unrealistic. I think that the financial community must have some stability before it will go into the financing of the property that is extremely low grade, that is in a cycle core or world market, whatever we want to call it. And if I could say just one thing, I would say that the greatest thing is the open pit mine and the strip coal mine needs to be given serious consideration in light of predicting what the cost, and as closely as they can, the cost today will be, let's say——

Senator McCLURE. I appreciate the necessity for doing the things that you have outlined, and I think that is one of the things the committee will consider in the drafting of the legislation. Another one of the problems is very closely associated with that is the necessity for some flexibility on the mining and the reclamation methods. But still permitting some adaptation during the course of the mining process. And that is particularly true, where over a period of years rather than confining it to a period of time.

I note that the both of you have not made the point that I am trying to make. You did, Mr. Richardson, on page 6, and you, Dr. Dresher, did on page 4. The fact that the open pit is not necessarily ever completed. It may cease operation for a while and then go back to recover some incremental additions of the ore body that have become economically valid for exploration production. At a later date when the market condition or technological changes make it economical.

There is one other aspect that we have not touched on at all, and I don't know whether you are prepared to comment on it at this time or not. If you are, I would welcome it. And that is the leaching process, which is somewhat different than any of these that we have been talking about, and which have rather unique environmental consequences.

Mr. RICHARDSON. As far as within the limits, you may have noticed as you added up the figures here that I say 83 percent of this and 15, the balance, comes from some underground operations there. The leaching of copper, and I suspect that what you would like, Senator, is a comment upon the acid waters that enters insofar as the leaching process is concerned.

I think you must realize that these are copper-bearing waters. These copper-bearing waters are recirculated back onto the dumps, and most of the mines in Arizona where there are planned leaching operations, the old areas have actually been covered with either a base of imperious tars or hydrocarbons of some sort. Because it would be very undesirable to lose any of these wasted solutions.

I am sure there is some seepage, but generally speaking these waters are acid-bearing waters and are delivered back up to the dumps upon which this water is poured back through. It would hardly be economical for them to not catch as much as they can, but I am certain there is some seepage that does take place.

Senator MCCLURE. There will be termination of the process at some time?

Mr. RICHARDSON. There has to be, and I can certainly see that if you are delivering acid and waters into streambeds or streams or things like this, these are, in general, limestones are being added now to neutralize the other acids at the present time. But generally speaking, there is this continuous recycling and the greatest loss there is water loss, more from the evaporation.

Dr. DRESHER. I assume that you are referring to the leaching rather than to the major leaching such as Germany Coal Mine? What Mr. Richardson said was absolutely true. Every means is taken to recover this, because it is a very valuable liquid. And to my knowledge, there has been no problem with groundwater contamination or surface water contamination due to such operation. They are very careful.

Senator MCCLURE. Dr. Dresher, you indicated how long you have worked in industry, but I don't think you stated how long you have been in your present post.

Dr. DRESHER. I have been in my present post for approximately a year and a half.

Senator MCCLURE. In the time that you have been there, have there been any changes made or have there been changes of recent date, even before you arrived, in the curriculum of the school that deals with the environmental concerns that the Nation is confronted with at the present time?

Dr. DRESHER. We are just now in the midst of changing our curriculum for the next 2 years, it is a 2-year cycle. But even prior to that this is dealt with in many of the courses which the students take. We don't want to overemphasize it, but we do want to make sure that every engineer which we turn out knows about this.

Engineers are, generally, brought up to look at cost as the overriding factors, and I think again we have to integrate the environmental cost with the economic cost, and optimize our operations on this basis, and this is the message we are trying to bring about.

Senator McCLURE. I know that at the University of Idaho college, they have taken some very positive steps, just as they are in the College of Forestry to make certain that the people are trained that are going out have the opportunity to be exposed to some of that aspect of the practices that will be required, and their desire out in the industry.

I think that is the kind of direction in which our schools can be of very great assistance. Even though we have in the best times tended to confine training in carefully defined limits and you were either an engineer or you were involved in reclamation or you were involved in some other thing, but very little cross-feed in the curriculum. I think it is very important to inject that in our schools.

Mr. RICHARDSON. May I just comment a little bit further on that, Senator. Not at this level, the college level, the Arizona Mining Association in conjunction with the State school system in Arizona, are currently in the process of preparing a study course on the ecology and environment and so forth, for schoolchildren. We had done this at the request of the school board, State school board.

Senator McCLURE. It is being conducted in a lot of different ways at the present time, and I think there is some retraining also going on. Bringing people out of industry back into the school on brush-up courses, new courses with respect to new technology, with new constraints upon operations in all of these resource fields. I think it is a very necessary and a very helpful development.

I have no further questions, but I do want to thank you very much, both of you, for your appearance here, and your statements and comments.

Senator METCALF. I think you very much, Senator.

Dr. Dresher, on the last page of your statement where you say "We should suspend consideration of such bills as Senate bill 425," and then you say that such bills are solely punitive. Are you saying that there should not be any surface mining legislation of this Congress, sir?

Dr. DRESHER. I am saying that we ought to use a phrase, I guess that Senator Fannin brought out, that with regard to the air pollution, we are talking about an overkill situation.

Senator METCALF. There should be legislation?

Dr. DRESHER. There should be legislation, but not to the extent that we knowingly cause such devastation.

Senator METCALF. Do you regard the bill that was sent up by the administration or the bill that was introduced by a large number of Senators, cosponsored by the present Senator, as punitive and solely punitive toward the mining industry?

Dr. DRESHER. I think the problem that I see in the bill is that there is a lot left to be desired in the description. And there is a lot left up to the Secretary to interpret. So, the industry really doesn't know, at any one time, although any one secretary how they are going to be treated.

Senator METCALF. Are you accusing the members of this committee, most of whom represent great and extensive mining areas, and have a long-term record as friends of the mining industry, as directing solely punitive bills at the mining industry?

Dr. DRESHER. I am not accusing you of that, sir.

Senator METCALF. Well, that is what you said.

Dr. DRESHER. I worry when we start thinking in terms of the extremely large numbers of dollars required to do actions within the letter of the bill.

Senator METCALF. I am worried that as a representative of the great mining industry, you have completely closed your eyes to some of the abuses that occur, and some of the concerns that people all over America have as to what the mining industry is doing to the environment. And I would rephrase your statement and say "In summary I would like to recommend that the mining industry apply its efforts toward the establishment of a policy which will integrate our environmental needs with our material needs and suspend further development until such time as the environmental consequences can be assessed and determined in the total national interest." Because there are people that are just scared to death, all over the Western United States, as to the further activities of the mining industry unless it is curtailed and controlled by adequate, strong, stringent surface mining legislation.

Now, I certainly appreciate the concern that you people have about the Bingham Pit. I am just as concerned about the Berkley Pit, of the Anaconda Co., in Montana. Friends of mine in the Mine and Steelworkers Union, are employed there. I have a eral concern.

I am also concerned about what the mining industry has done to the Eastern part of the United States as far as surface mining is concerned, and is about to do to the Western United States, unless we do something about controlling it.

Thank you very much for your appearance. You have made a contribution in touching up these points. As I have said before, we are not going to require you to fill up the Bingham Pit or the Berkley Pit. Somebody said this morning, "Well, we can leave it to God to do the restoration," but I think that we had better hurry it up ourselves and not quite leave it to God.

Mr. RICHARDSON. Senator, my comment was that within the life cycle of this operation, the bill that is contemplated, as I see it, it is to be done concurrently. You understand what I am talking about there?

Senator METCALF. I think we understand each other. I am just disappointed that to some extent you directed a finger at this great committee, which has been more concerned with the welfare of mining over the years than any group of people that I have ever known, and implied that we are directing solely punitive legislation at the mining industry, which is just not true.

Mr. RICHARDSON. May I speak to the Arizona Mining Association? We don't think this. I want you to know that we recognize you, too, have problems.

Senator METCALF. Thank you very much.

(The prepared statements of Messrs. Richardson and Dresher, their subsequent comments follow:)

UNITED STATES SENATE

Committee on Interior and Insular Affairs

Hearings

on

Surface Mining Legislation - S.425

March 16, 1973

Statement of James K. Richardson, President

Arizona Mining Association

Mr. Chairman and members of the Committee, my name is James K. Richardson and I am the President of the Arizona Mining Association. I am a mining engineer, having received a B.S. in Mine Engineering in 1932 from the Missouri School of Mines; an Engineer of Mines degree from the same institution in 1935; and a Doctor of Engineering degree from Michigan Technological University in 1969. With the exception of four years spent in the armed forces, my entire working life has been within the mining industry. The positions I have filled during this period run the gamut from underground mucker to Vice President of one of the largest underground copper producers in the United States, which position I occupied prior to coming to Arizona in October last year. My experience in the industry has given me the opportunity to work, intimately, on problems

in some of the largest underground and open pit mines in the United States. In 1951, I was loaned to the Defense Minerals Administration by my then employer to serve as Chief of the Copper Branch. As such, I had the responsibility of studying and recommending the feasibility of new copper production projects, the development of which would enhance this nation's copper ready availability for defense needs.

I am speaking today on behalf of the Arizona Mining Association. Our thirteen member companies produce, from their Arizona operations, more copper than is produced by all of the other 49 states combined or by any other country in the free world. Their production of other vital metals as by-products of their copper operations is such that Arizona's rank among metal producing states is number two in molybdenum; number three in silver; and number four in gold. Arizona is generally conceded by mining authorities to constitute the non-ferrous metals "treasure trove" of this nation.

We speak, therefore, with some authority for a most significant portion of this nation's non-ferrous metals production. Some 83% of this production accrues from open pit mines and 15% from underground planned caving. Both of these type operations could be adversely affected by the enactment of S.425 - "Surface Mining Reclamation Act of 1973", which would by many of its terms force their closure.

The chief reason why this bill would have such a catastrophic effect, in my opinion, stems from its basic conceptual

framework. Although the bill would be applied to mining for all minerals--not just coal--and to all surface mining--not just strip mining--it is clearly written with coal strip mining foremost in mind. Even where different provisions have been inserted for other types of mining, this has been done without full comprehension of the enormous differences which can, and generally do, exist between conventional strip mining for coal and open pit mining, as practiced, for copper.

One of the banes of our existence in Arizona is the common confusion in the public's mind of strip mining with open pit mining. Every Arizona mining man of my acquaintance bridles when a newcomer refers to our great copper properties at Ajo, Morenci, Sierrita, Twin Buttes, Inspiration, Mission and so on, as "strip mines." It isn't that we have anything but the highest regard for our colleagues in the coal mining industry, but it just isn't a factual reference.

Robert Peele, as early as 1927, in his "Mining Engineers' Handbook" pointed out that strip mining involved "stripping and mining deposits of large areas and tonnage, which are fairly uniform in character and lie near the surface." Thus, strip mines are normally relatively shallow, transient, "one-pass" affairs that strip off the overburden, remove the desired material, and backfill the opening in one continuum. The operation may mine a bedded deposit over a significant area, both as to length and width. Our open pit mines are significantly different and cannot be equated in such a concept.

I have great respect for the results responsible strip mining operators are obtaining in matters of land reclamation and restoration. They have created, in many instances, vastly improved agricultural and recreational areas. Despite adversities, they have nobly responded to the public's requirement for more and more energy fuels. But what works for the strip mining operators may be totally inappropriate for open pit operations, because of this almost total lack of similarity.

An open pit copper mine must be envisioned as an operation that is going to continue for decades in the same relatively restricted area. Without such concept, it would be totally infeasible to develop it initially. It is not simply a matter of making an incision, removing the ore in a matter of days, weeks or months, then closing the incision so as to leave the minimum scar.

The initial difference between a potential open pit copper mine and a strip coal mine lies in the extreme rarity of areas of economic copper mineralization susceptible to open pit mining operations. For example, despite Arizona's world leadership in copper production, all of her great open pit mines occupy a total of only 0.2 percent of the land area of the state, and the development of new mines in future years is not expected to change that figure to any marked degree.

An open pit operation, then, plans to mine a very large volume of rock, over a long period of time, in a relatively limited area. The ore body itself could be 1500 feet

or more in thickness and it is, ordinarily, extremely irregular. The ultimate pit surface limits are largely determined on the basis of safety of employees and maximum extraction of the defined ore body.

The mining problem, therefore, becomes one of finding a means by which a 2,000 foot excavation can be safely and economically made within the restricted area available. Literally millions of tons of earth must be moved, most of which contains little or no copper mineralization, in order to reach the ore body, whose copper content, for example, may be 0.6%. But for each ton of this 0.6% copper ore, you must also mine, on the average, two tons of barren waste. Therefore, each ton of material you mine and transport averages 0.2% copper--or four pounds per ton mined. If technology permitted 100% recovery, which it does not, you would be getting at today's prices about $2.40 for each ton handled.

The mining of such a low grade of ore requires mass production methods and economies of scale, and the amount of material which can be treated as ore varies inversely to the costs of mining. As costs rise, lower grade ore can become waste.

Obviously, gentlemen, the capital investment in such an operation is huge. No one thinks, today, of developing an open pit mine for less than a $100 million initial investment, and the usual outlay--before a single dollar is returned--often is two or three times this amount. No major development can be financed unless there is assurance that it can operate in the

same location for a long enough period to liquidate this investment. Actual experience indicates that the typical open pit operation has a productive life measured in decades.

The points I wish to make are that (1) open pit mining is not transient; (2) its life is measured in decades; (3) the maximum perimeter of the pit can be predicted within reasonable parameters and is limited in size; and (4) the land required for solid waste disposal and ancilliary facilities is definable and limited. Open pit mining must be viewed more as a permanent, than temporary, land use, and I cannot think of a single Arizona open pit that does not constitute by far the highest use of the land, in terms of the benefits derived from it.

Reclamation of solid waste disposal areas have, under some circumstances, proven feasible. The nature and degree of possible reclamation varies from operation to operation, depending, largely, upon the material originally moved and activity of the area during the life cycle of the operation. The pit area itself, however, is a different matter. Backfilling and restoring to original contour, as may be required by this bill, is physically and economically impossible. Moreover, such backfilling would constitute an irrevocable commitment to abandon future mining in the area. Remaining mineralization, uneconomical by today's standards, would be lost for the future and thus constitute a flagrant waste of our nation's natural resources. Price - technology establishes value cut-offs that change from year to year.

Today's waste may well be tomorrow's copper source.

Even if it were possible to make such restoration, such effort would be non-productive, and the energy required to put our unused rock back into the excavation would be totally wasted, because no subsequent use could possibly justify such enormous expenditure of critical human skills and energy fuels.

These open pits, if ever abandoned, will, more quickly than most people realize, be reclaimed by nature and melded again into the landscape which already includes by nature's design a vast panoply of variegated valleys, canyons, mountains, and buttes. This is not to say that, when mining ends, pits should not be left in such condition as to be safe for visitors and ready for God's handiwork.

Gentlemen, my message today is concerned not so much with details of S.425 as with the concept of the tremendous differences which exist between strip mining and open pit, hard-rock, mining. I am aware that the bill, as written, tries to recognize those differences and allow for them, but in my estimation, it does not adequately do so. The detailed discussion of S.425 has been admirably handled by those testifying for the American Mining Congress and the Arizona Mining Association endorses their position. Let me emphasize, however, that in my opinion the bill as presently drafted would close every open pit mine in Arizona.

I would be remiss in my responsibilities to you gentlemen if I neglected to point out another area of real concern in addition to the vast difference between open pit and strip mining. As our nation's need for copper grows, and as exploration techniques are improved to give man greater knowledge of mineralization under deeper cover, underground mining employing planned caving techniques, such as block caving, will play an increasingly prominent part. A major producer in Arizona is currently mining a deep-seated copper ore body by this method where blocks of ground are undercut and planned caving takes place due to the weight of the block. This naturally may result in subsidence on the surface, but it provides an economical and safe method of extracting these deep seated, low-grade orebodies. This method of mining is sometimes described as open pit mining, starting from the bottom first. If it is to be covered by legislation, it should be treated similarly with open pits, for its problems and reclamation possibilities are generally the same.

I would further call to your attention that this Association in earlier testimony before this body has tried to make two points which we most emphatically hold to be valid: First, that Congress should not wittingly or unwittingly abdicate its legislative power to the executive branch by vesting in the Secretary of the Interior, whoever he may be, vast discretionary powers.

Second, the policy of the United States, as expressly stated in the Mining and Mineral Policy Act of 1970, is to

foster and encourage a prosperous, viable, domestic mining industry. Inherent in legislation such as that being considered today are such potential devastating effects upon our balance of payments, our defense capabilities, our standard of living, and our international relations that we must proceed with utmost thoroughness in exploring all facets of any legislation dealing with so essential a matter as mining.

In closing, gentlemen, I convey to this Committee an invitation which we have extended in the past. Come to Arizona and see for yourselves what I have been talking about. We will show you all aspects of open pit and planned block caving operations. We believe you will find the time thus spent agreeable, profitable, and helpful in your deliberations.

I am, personally, grateful to you for your consideration and this opportunity to express these views.

REPRESENTING ARIZONA'S NUMBER ONE BASIC INDUSTRY

MAR 27 1973

ARIZONA MINING ASSOCIATION

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March 23, 1973

SENATE INTERIOR COMMITTEE
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The Honorable Henry M. Jackson
United States Senator
Chairman, Senate Committee on
Interior & Insular Affairs
137 Old Senate Office Building
Washington, D.C.

Gentlemen:

During the recent hearings on S.425, in which I testified on March 16, 1973, Senator Metcalf requested that I submit for the record my views on the Administration's Surface Mining Bill, S.923. A copy of the bill was made available to me on March 16, and I am making an attempt to constructively comment herein.

Somehow, I feel that this comparison is much like asking a condemned man whether he wanted to be hung with a new rope or an old one. Quite frankly, our preference is not to be hung!

I have heard both bills (S.425 and S.923) called "punitive" legislation. It is difficult for me to call them such, for it is inconceivable that members of the United States Senate (many of whom are from mineral oriented areas) would seek to "punish" an industry which has responded to this nation's demands so nobly and selflessly during periods of crises. The "sins of the father" are apparently to haunt the heirs as vociferous militants (whose numbers are limited) would turn back time to a period of pristine wilderness and pioneer living. Life just isn't that simple and one can only hope that reasoned logic and common sense will ultimately prevail.

We are not opposed to federal surface mining legislation, we only ask a realistic design to carry out the concepts, as we understand them, of the Mining and Minerals Policy Act of 1970. We are asking that such legislation have the least practicable adverse effect on values left in the ground, following current economic mining and that reclamation requirements be reasonably attainable within the realm of economic feasibility.

S. 425 could, conceivably, prevent current operations from continuing work for a protracted period (33½+ months) following enactment. S.923 would allow operations in existence one year in which to secure a permit and two years, following approval, to come into compliance.

S.923 does not specify a permit term which could detrimentally affect financing. Rather, it relies on the Secretary and the state regulatory authority to specify such terms. In view of the long term life of open pit mines, a permit should be for a period of time no less than that required to return the investment by terms of its feasibility study.

Although we have great respect for the responsible element in the coal mining industry, we are strongly opposed to a single bill devoted to both hard-rock and coal mining. The hard-rock element of the mining industry has a completely different marketing and pricing philosophy and distribution patterns. In my initial testimony, our concern with S.425's terms dealing with coal strip mining and hard-rock open pit mines in a single bill was expressed. There is such a fundamental difference between these two types of operations, one can predict continuing interpretative, enforcement, and administrative difficulties on the part of industry and government, unless these basic, conceptual differences are realistically dealt with.

The open pit provisions of S.923, apparently, apply only to "new mined areas". This bill, like S.425, requires that the areas be returned "to approximate their original contour or similarly appropriate." This requirement is a waste of energy and skills in that the life cycle of open pits is of such duration as to make such effort pure speculation and would add another indefineable and significant cost, which could preclude development and operation.

I note that no detailed procedures for hearings and intervention are provided in S.923. I assume, therefore, that the provisions of the Administrative Procedures Act would apply. The provisions of S.923 dealing with planned block caving (underground mining) in Section 201(b)(5) are seemingly more realistic than S.425.

We are strongly opposed to criminal penalties as outlined in Section 207(b) and civil penalties of $1000 per day after the fifteen day period following notice of violation. It is noted, however, that notice of violation is accompanied by order for cessation of mining operations. As a consequence, this is entirely unclear as to how such penalty would be incurred. The judicial review provided in Section 208 at least permits a cessation of litigation in time.

We do think that cognizance should be made of the Mining and Minerals Policy Act of 1970. To do otherwise implies that such act is of no consequence and we firmly believe it should guide the industry and legislative actions.

With reference to the definitions contained in Section 101: We note term "prospecting" is excluded in Section 101(b). Generally speaking, "exploration" is synonymous with "prospecting." This definition is therefore not clear and precise. This confusion is compounded as one reads Section 101(c). The definition there of "prospecting" is that which I consider "exploration".

Section 101(i) defines "soil". The impracticability of saving and segregating for decades the top soil in open pit operations is, I'm sure, apparent. The "soil" in the main is saved and stacked. Often it is terraced and, where possible, revegetated in line with our conception of good conservation practices. The major portion, however, is broken rock with minimal material conducive to vegetation.

It is respectfully pointed out again that we have real difficulty in adjusting our thinking to the fact that Congress is, wittingly or unwittingly, abdicating its legislative responsibilities to the executive branch. We are convinced that the Secretary of the Interior, whoever he may be, should not have such vast discretionary powers over an industry so vital to our national well being.

Trusting that these views will be of some usefulness in your deliberations, I am

Respectfully yours,

J. K. Richardson

JKR:ls

SENATE BILL 425, 93rd CONGRESS

TESTIMONY OF DR. WILLIAM H. DRESHER

BEFORE SENATOR JACKSON AND THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

MARCH 16, 1973

Mr. Chairman and members of the Committee: I am Dr. William H. Dresher, Dean of the College of Mines of the University of Arizona. I am a metallurgical engineer by profession and have worked for fifteen years in the mining and metallurgical division of a major U. S. chemical company before assuming my present academic post. I am here on my own behalf to comment on Senate Bill 425, "The Surface Mining Act of 1973". My state has a strong interest in surface mining because it annually produces more than fifty percent of the nation's copper and is one of the nation's leading hard rock mining states.

Mr. Chairman, I am sure that you and the members of the Committee are thoroughly acquainted with the precarious position of our nation today relative to the supply of energy and mineral resources required to sustain our nation's economy. The First Annual Report of the Secretary of the Interior, under the Mining and Minerals Policy Act of 1970, issued just one year ago, contains a grim warning of this position. Briefly, the Secretary's report reveals that the development of the mineral resources of the United State is failing to keep pace with its rapidly expanding economy to the extent that there is an alarming increase in our dependency on foreign sources for essential energy and mineral needs. A deficit in the balance of payments of two billion dollars in 1950 grew to 8.6 billion dollars in 1970 and is projected to rise to sixty-four billion dollars by the year 2000. Recent and possible future devaluation of the dollar in overseas markets will sharply intensify this situation to the extent that our national security could become jeopardized and the energy and material requirements of our populace will

be difficult, if not impossible, to meet.

Mr. Chairman, the difficulty I see before us is the lack of any clear-cut national goal, policy or commitment which will guide us into the next century and which will meld our environmental goals with our material goals to yield the quality of life and the security we all desire. Recognition of the environmental and societal imperatives has come upon us too rapidly for sound integration into our economy. We are now contemplating taking stringent and positive steps in the environmental direction, in this bill and in others, without full consideration of the measures required to assure the fulfillment of our energy and material needs. The nation's energy resources in particular are required to solve our larger environmental problems of air and water pollution as well as scrap recovery and recycling. Measures restricting mined mineral fuel production would be detrimental to these important national efforts.

Last spring I participated in a series of University Forums held by the National Materials Policy Commission for the purpose of examining the position to be taken by the Federal government in dealing with the material, energy and environmental needs of our country. The real questions to be answered, as revealed by the Forums, are: "How much production is needed?" and "How much protection is needed?" Without the carefully-derived answers to these questions we may find ourselves far askew of our ultimate goals. The former Secretary of Commerce, the Honorable Peter G. Peterson, summed up our dilemma very well when, in a speech on this subject last September, he said, "What is clear to me in all of this is that we must do a far better job of forecasting the future costs of today's decisions." Mr. Chairman, some mechanism must be found to conduct an assessment of the total impact of any steps contemplated in the interests of fulfilling the broad intent of either the National Environmental Policy Act of 1969 (PL-91-190) or the Mining and Minerals Policy Act of 1970 (PL-91-631). Until this

is accomplished, we will be on a collision course with our economic systems of business, industry and technology and our long-term concern for the environment. The result could greatly weaken our nation and its people and, in the end, none of our goals would be accomplished.

Mr. Chairman, you have heard from people who are far more expert than am I in predicting the adverse impact of The Surface Mining Act of 1973 on our nation, its people and its industry. We are all aware of the manner in which the land and its people have been abused in the interest of the extraction of minerals in certain areas of our country, and most of us are in agreement that measures must be taken against repetition of such abuses. We are, I am sure, disputing differences in "degree", not in "kind" in many parts of the bill before us; however, there are certain parts of the bill which, if the bill were enacted, would inflict an unnecessary hardship on the mine operators and their employees, the states involved, and, ultimately, on the nation. In this context, Mr. Chairman, I refer to the failure of the bill to recognize adequately the very real difference between the two main types of surface mining--strip mining and open pit mining. In a different frame of reference, a strip mine can be likened to a sprawling urban suburb, continuing for miles in the removal of shallow, well-defined beds of mineral. An open pit mine, however, can be likened to a high-rise apartment building--both are to some people an eyesore, but to others, an engineering marvel--but, nontheless, both are confined to a single area. A strip mine is dynamic with but a brief operation at any one location. An open pit mine is often worked for many decades and may sequentially provide employment for two to three generations of people. Father, son and even grandson have worked in the great mines of Bingham, Utah; Butte, Montana, and Ajo, Arizona. Some mines now in existence in Arizona have a life expectancy of fifty or more additional years of operation!

Because of the gradation of values in the rock of most metal mines and the

ever-changing value of the ore due to world price changes and to technology improvements, an open pit mine is seldom regarded as being "mined-out". Some mines are already in their second stage of development. These have progressed from underground workings of high grade ore to open pit workings of low grade ore. This transition was made possible by the development of technology to the point that moving large tonnages, as much as eighty thousand tons of earth per day, became economically feasible. Thus, while the once great copper mine at Jerome, Arizona is closed and that at Bisbee, Arizona is in the process of being closed, these mines cannot be considered to be "mined-out". As economics or technology changes they may very well support large mining operations in the future. Restoration of the land contour of these mines to the degree required by Senate Bill 425 would forever seal off mineral resources which would be lost to future generations of Americans! A mineral deposit must be regarded as part of the fragile environment for, once mined out or carelessly blocked from future access, these minerals will be gone forever. Provisions must be made in a mined area restoration act which clearly differentiate in the treatment of open pit mines from that required of strip mines.

Mr. Chairman, until now I have not discussed the economics of land use and the position of mining in this respect. As an example, in Arizona, where mineral production placed over one billion dollars into the state and national economy last year, mining occupies <u>less than two tenths of one percent</u> of the State's total land area--most of this mining was by surface mining methods. Within that area, the income from mining amounted to over $8000 per acre last year and, of this, over $1500 went to wages. By contrast, cattle grazing, the State's largest land user, at fifty-five percent, yields but $7.50 per acre. Crop raising has an annual yield of a little more than $230 per acre. But perhaps more important, although the total <u>personal income</u> contributed from agricultural use of Arizona land

has been a little more than the contibution from the State's mineral industry, agriculture has required three hundred and fifty times as much land! It would seem that the hardship caused by the restrictions imposed on surface mining by Senate Bill 425 are totally out of proportion to the small amount of land disturbed and the great benefits derived by surface mining in a hard rock mining state like Arizona.

Mr. Chairman, in summary I would like to recommend that the Congress apply its efforts toward the establishment of a policy which will integrate our environmental needs with our material needs and suspend consideration of such bills as Senate Bill 425 until such time that the consequences of environmentally dictated legislation can be assessed in terms of the total national effort. The proposed Surface Mining Reclamation Act of 1973 is totally at odds with the provisions of the Mining and Minerals Policy Act of 1970. Our nation's security and the quality of life of its people are far more fragile than the disturbance of the small fraction of the nation's land area which is occupied by mining, and far more irreversible.

Legislation should be enacted to provide the incentive for creative and constructive treatment of our nation's problems and not be solely aimed at punitive measures placed upon those who cannot respond to awkward and economically impossible restrictions. Our nation's mineral industry is a national resource--a major contributor to our Gross National Product and to our security. If our future as a people and as a nation is to be assured, it cannot be allowed to falter.

I thank you, Mr. Chairman, for this opportunity to speak on this very important subject.

WILLIAM H. DRESHER
1622 ENTRADA DIEZ
TUCSON, ARIZONA 85718

(602) 299-3978

March 20, 1973

The Honorable Lee Metcalf
United States Senate
Washington, D.C. 20510

Dear Senator Metcalf:

During my testimony on S.425 on Friday, March 16, 1973, you requested that I provide you with written comments concerning S.923. Before my specific analysis of S.923, I would like to explain my basic position on both of these bills.

Both S.425 and S.923 have been referred to in the press as being "strip mining bills" and, in fact, it appears that the major target of the legislation is the coal strip mining operations now in progress in the Appalachian Mountain states, in Arizona and New Mexico, and soon to come to the states of Wyoming and Montana. The bills debated in the House last year were clearly identified as being "strip mining bills". There is much merit to legislation requiring reclamation of strip mined areas or prohibiting strip mining in areas in which the life, health and economic well being of the inhabitants of the area will be adversely affected. The present physical and sociological conditions in the Appalachian Mountain area are testimony to this need. Further, it appears that the specific strip mining techniques of contour mining and auger mining are particularly responsible for these conditions in Appalachia.

Coal is a commodity which is available at various depths in the earth and at various locations in the country. Other mineral commodities are not so ubiguitous. The iron ore of Minnesota, the phosphate rock of Florida and the copper of the several western states are prime examples of commodities which are restricted in their geographic location and the type of mineral deposit which can be mined. Our land use planning must recognize that certain areas must be set aside for primary use as mining sites, just as certain areas are designated as cities, jet ports and parks. Mining activities at these sites must be viewed as an asset, not a liability.

There is a very great difference between strip mining, in all its forms, and open pit mining in terms of impact on the environment and the alternatives which are available. The very nature of the ore deposits will control, to a large extent, the type of mining procedure to be used and this nature also forecasts the extent of disturbance of land areas. I am told that up to 12 per cent of the State of West Virginia could be strip mined for coal. I am personally familiar with the mountainous nature of the State. The construction of the Charleston airport required the leveling of two mountain ranges to allow modern commerce to come to the State. In contrast, Arizona, which probably has the largest concentration of open pit mines in the nation, is now disturbed to an extent of less than 0.2 per cent of its

land area by all mining operations, and it is unlikely that such operations could ever disturb more than a simple multiple of this figure. My concern, Senator Metcalf, is that well-meaning legislation, written to prevent further abuses of a specific nature, will cause total disaster to a major segment of an American industry--an industry which is peripheral to the main problem. It was to this concern that I addressed my testimony on March 16, 1973, and it is to this concern that I address the following comments on S.923:

1. Any surface mining legislation must recognize the Mining and Minerals Policy Act of 1970 as a boundary restraint--S.923 does not.

2. Surface mining legislation should differentiate its reclamation requirements with regard to:

   a. geographic area of the country--i.e., arid lands vs. non-arid lands;

   b. type of mining method used--i.e., type of mineral deposit being worked.

   S.923 is not sufficiently specific in these differentiations. We must acknowledge that certain types of mining must be practiced and that reclamation back to the original condition of the land is impossible. In these cases, health and safety considerations should be the principal areas of Government concern. Where possible, post-mining uses of the mined area might be considered for continued economic development of the region.

3. Title II, Section 201 (a)

   A mineral deposit is not defined by political boundaries; therefore, a provision should be made to define the hierarchy of authority if a single mining operation is to include several categories of land ownership. I recommend that the state agency be defined as the responsible authority if state and federal lands are both involved in a single operation.

4. Title II, Section 201 (a)(4)

   This section cannot be applicable to an open pit mine and still expect the mining operation to survive. The provisions set down by (b)(3)(i), (b)(3)(ii) and (b)(3)(iv) are economically unfeasible and probably technically impossible to the fullest extent called for. The degree to which a mine operator can depart from (b)(3)(ii) is and will continue to be unclear; thus, increasing the degree of uncertainty in the decision-making on the part of the mine operator and his financial backing group. I recommend that

(b)(3)(i) and (b)(3)(ii) be deleted from any section of the bill dealing with open pit mining and that (b)(3)(iv) be modified to include revegetation only in those areas not actually occupied by the pit itself.

5. Title II, Section 201 (a)(b)

A performance bond sufficient to insure the reclamation of mined areas to the extent called for is completely out of the question for an open pit mining operation. I recommend that a bond be required to serve the purposes of (b)(3)(iii) and (b)(3)(iv) (as modified in item 4 above).

6. Title II, Section 201 (a)(8)

Since an open pit mine cannot be reclaimed to the extent called for in S.923, this section must be excluded from the open pit mining section of new legislation. If the state's land-use plan excludes a mine for reasons other than inability to reclaim the land, the state's decision will be acceptable. As written, (a)(8) will be a de facto prohibition of open pit mining.

7. Title II, Section 201 (a)(14)

Provisions must be made in this section to assure a reasonable degree of stability of regulations. The large capital investments required for an open pit mine, coupled with the long duration of operation, require stable operating regulations in order for financial investment to take place. Mining is a high-risk business when just the forces of nature are controlling. Unstable governmental regulations will make it more so.

8. Title II, Section 201 (b)(1)

The Secretary should consider three criteria which satisfy performance standards:

a. national requirements for the mineral commodity
b. relative degree of environmental protection desired
c. relative costs involved

Unfortunately, these considerations will still be controlled by the Secretary's intuition, for he cannot assign a dollar value to environmental protection with the same accuracy that the price or a mineral commodity will be influenced by supply and demand or that he can estimate the costs of reclamation. Inasmuch as the Secretary is already responsible for (a) above, he must be permitted to integrate this into the environmental responsibility placed upon him by this bill.

9. Title II, Section 201 (b)(4)

   Items (4)(i), (4)(ii) and (4)(iv) are not applicable to open pit operations. Item (4)(iv) should be rewritten to exclude the pit itself.

10. Title II, Section (b)(5)

    Controlled block caving is a form of underground mining which relies on subsidence. It is an important method of mining large tonnages of ore and must be treated in the same manner as open pit mining in legislation. I recommend that (b)(5) contain a provision exempting controlled block caving from the subsidence restriction. The states can designate areas in which controlled block caving mining methods will be prohibited for land use planning reasons.

11. Title II, Section 207

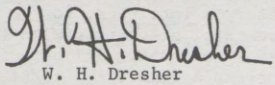
    This bill, like S.425, is excessively punitive in its treatment of nonconformities to regulation. Criminal penalties are appropriate only for willful violation of a law. An order to cease mining operations must be limited to only those instances wherein human life or health is endangered. The right of appeal must be extended to the mine operator, particularly in view of the vagueness of the regulations.

12. Title III, Section 301 (b)

    The Mining and Minerals Policy Act of 1970 must also be listed. Without the inclusion of this very important act, the Secretary will be divided in his responsibility to assure an adequate supply of mineral commodities on one hand and to protect the environment on the other. These two imperatives must be integrated. My testimony of March 16, 1973 is a plea for this integration.

In closing, I want to reassure you that I am not opposed to surface mining legislation per se. I am opposed to legislation which will encumber the national effort toward security and economic progress. A bill which addresses itself specifically to the social and economic problems incurred by certain specific types of mining operations should provide the protection the nation needs without overly encumbering our supply of major mineral commodities.

Sincerely yours,



W. H. Dresher

cc: Senator Paul J. Fannin

Senator METCALF. Gentlemen, this hearing was originally scheduled for 3 days. We spilled over for an additional day. I have a longstanding engagement to participate in a judicial panel this afternoon. Therefore I am not going to be able to be here this afternoon for the conclusion of the hearing. Senator Fannin, Senator Hansen, and Senator McClure and perhaps other Senators will be here, but in order that I can be sure on this last day to hear the only witness from Montana, is Ms. Ellen Withers, chairman of the Northern Plains Resources Council here?

Ms. WITHERS. Yes, sir. I wasn't quite planning on it right now. My testimony is coming, I don't have it with me.

Senator METCALF. Will you be prepared to testify after I call the next witness? I want to be here when you testify.

Ms. WITHERS. Yes, sir.

Senator METCALF. Very well. So, the next witnesses that are going to be called, are Mr. Baldwin Lloyd, of the Appalachian People's Service Organization, and Mr. Jim Coen, Social, Economic, and Political Issues Task Force, Commission on Religion in Appalachia.

We are delighted to have you both here to add your expressions. Repeatedly through here are concerns of Appalachia and I hope you can summarize, for I want to be here to hear as many witnesses as possible.

Reverend Lloyd, are you going to start?

STATEMENT OF REV. R. BALDWIN LLOYD, APPALACHIAN PEOPLE'S SERVICE ORGANIZATION; AND JIM COEN, SOCIAL, ECONOMIC, AND POLITICAL ISSUES TASK FORCE, COMMISSION ON RELIGION IN APPALACHIA

Mr. LLOYD. Thank you, Mr. Chairman, and members of the committee. Coming before you is a new experience for me, but an opportunity I appreciate very much.

My name is Baldwin Lloyd. I am from Blacksburg, Va., where I have lived since 1958. I am an Episcopal priest working as the executive director of the Appalachian People's Service Organization—APSO—which is the Episcopal Church's Appalachian regional work. This work takes me throughout eight Appalachian States. I am quite familiar with the region and the problems of strip mining.

Part of my present work is with the Commission on Religion in Appalachia—CORA—which is the cooperative effort of 17 Church denominations. Specifically, I direct CORA's operation coal mining project. Also, since January of this year, I have served as chairman of the Appalachian coalition, which represents groups and organizations concerned about the ill effects of strip mining.

Today, I will address my remarks solely to the effects strip mining has on people in Appalachia, many of whom I have come to know personally. To me, the most critical aspect of strip mining is what is happening to people and to the quality of their lives. I would like to add, however, that I am quite aware of the need for mining coal and for its increased production.

I do not live where strip mining occurs. But I spend from one-third to one-half of my time traveling in the region where it does occur. I

have come to know intimately people in southwestern Virginia, West Virginia, Kentucky and Tennessee. People who are directly and adversely affected because of this devastating process of mining.

In spite of the efforts of many of these people to be heard, their testimones are rarely voiced at hearings such as this one. I checked over the list that has been heard by the committee, and it distresses me that no person from the region who are adversely affected, are speaking. But I note that it is very difficult for them to get here and for us to make arrangements for them to get here. I hope maybe someway we'll be able to get you and them together.

Senator METCALF. You had very eloquent testimony on behalf of the region and the impact on the region, when Congressman Hechler testified here the first day of the hearing. He had rather lengthy and very well documented testimony. In the document of this area in West Virginia, he had case studies that were a part of the record.

Mr. LLOYD. Yes sir, I think it still is different, that myself, for instance speaking for them, I can, you know, share with you and I would like to share with you some of the things that I witness from these people. But I can't give you their feeling of what it means to live in these conditions. I can only try, and that is what I would like to do today. The impact of strip mining in the last few years has had a tremendous impact on the people of the region and it was graphically demonstrated at a mock trial at Clinch Valley College on December 4, 1971. It was a trial against strip mining conducted by people from Virginia, Tennessee, Kentucky, West Virginia and Ohio. They came to testify—to speak of their grievances and about the injustices perpetrated against the people of the region. For too long they have felt ignored by their State capitals and the capital of their Nation.

The trial itself speaks of the frustrations people in the mountains experienced. Getting no sympathetic ear from governmental authorities at the local, State, or Federal levels, these persons tried to draw attention to their problems by means of the mock trial. Expressed throughout these testimonies were pleas to put an end to strip mining, which was threatening to wreck their lives, and those of future generations yet to come.

At that trial, a Rufus Brooks was to testify. Rufus Brooks is from Breholm on Buffalo Creek, Logan County, W. Va. At that time, nearly 3 months before that tragic disaster of February 26, 1972, which all but destroyed 14 communities along the 17 miles of Buffalo Creek, Rufus Brooks predicted impending disaster in this hollow, not because of the dam that might break—though he was well aware of that sinister danger—but rather because of the effects from strip mining. Bulldozers were busily at work on the mountains that hang over either side of Buffalo Creek hollow. From June through the fall Breholm and Ammersdale were hit over six times by a sea of mud washing down off the mountains. Homes were flooded and damaged. Rufus spoke of "mud up to my knees under and all around my home."

These hollows and mountains have been the home of these people for generations. Life may have been rugged, even harsh, and marginal, but life had a quality of completeness about it. However, with the advent of timbering and then coal into the region, this quality of life and its mountain culture became severely threatened.

The coming of strip mining has caused the most ruthless attack yet to be put on the people and on their land. Central Appalachia, where strip mining prevails, has become a land that resembles the battlefields of war. Where the people are the victims, and the land becomes a waste.

Those who drive through the area, or fly over it, can not help but be aghast at what they see. But it is more than just an "eye-sore." The beauty and value of the mountains just in themselves must not be discounted, though.

It has a profiled effect on the people that live there. As one coal miner told me, "When a man finishes a day's work underground, the one thing he should have the right to is to enjoy our beautiful mountains unscarred. But it tears you up to see what they're doing to our land."

Much of Appalachia is becoming a region where it is increasingly hazardous to live, to work or to raise a family. Within my lifetime I have seen beautiful sparkling clear mountain streams and rivers turn to streams that run black and brown, filled with silt and acid. No longer are these streams able to support life within them, nor serve the needs of man. According to Aubrey Caudill of McClure, Va., "The river that runs near my home is so thick with mud you couldn't drown in it, but you might suffocate."

Jim Coen lives at the foot of Brushy Ridge in Dickenson County, Va. Pointing to Coon's Creek which runs past his mobile home he says:

> You see that creek out there? There was a time that it was so clean you could drink from it. My wife could do our washing in it. Now, it isn't fit for a hog to drink from. Not even a crawdad can live in it.
>
> There was a time you could find water anywhere in these hills that was clean and fresh to drink. Now, water on the mountains is about all gone and what is left is mostly polluted.

As Rufus McCoy who lived on top of Brushy Ridge discovered, even digging a well is no guarantee that one will have water. Rufus, who was a retired schoolteacher and twice elected to the Virginia House of Delegates, told me last fall, "I have gone to a lot of expense to dig a well to get water. But strip miners blasting some 2,000 feet away have sunk my water system."

Appalachia is a region blessed with water, with a heavy rainfall. But this blessing is turning into a nightmare for more and more people in the region of strip mining. With the heavy rains come landslides carrying mud, rocks, and trees down the mountains, bringing terror and destruction upon the folks who live below.

Not only are thousands of miles of streams and rivers and lakes and ponds rendered dead and useless, but when the rains come they have become the source of much to fear. Last April in eastern Kentucky, 34 counties were declared by the Governor to be disaster areas. Not all of these counties are where strip mining takes place, but most were. The areas of most severe destruction to property occurred where there is strip mining. Many people were marooned for as long as 3 or 4 days in Knot and Perry Counties. Landslides blocked the roads that went up to their hollows and flooding waters washed out bridges. Homes were flooded and damaged by what is now all too familiar a sight to an ever-increasing number of people, a quagmire of mud, rocks, and trees washed down from the ever-unstable spoil banks. Spring gardens were lost. Many gardens, top soil and all, were washed totally away.

Mart Shepherd of Lotts Creek in Knott County, Ky., relates:

My six children had to wade to school through mud. Often the roads are closed; there are days the mailman cannot make his delivery. I used to live on the side of a mountain, now it's all level and it floods under my house. $3,000 damage has been done to my home. I tried to sue, but the company who did it had gone out of business.

There are 350 families up Lotts Creek who are all affected by stripmining in one way or another. It just isn't right.

Mart Shepherd estimates that as many as a third of the people in Knott County suffer from strip mining's ill effects.

Mart sums up in these words, what I fear from more and more people in the mountains today, "We do not live in a society. We live in a madhouse."

And it does not matter which State it is in, or what laws the States have or don't have. The story is the same wherever there is strip mining, be it in Tennessee, Ohio, Pennsylvania, Kentucky, West Virginia, or Virginia. The story tells about the same madness.

It is the kind of madness that I hear parents speak of. "When day-long rains come, we fear to go to bed. We don't want harm to come to our children."

It is the kind of madness that Tom Austin recounts of his sister-in-law who lives in Dickenson County, Va. He tells of her narrow escape from death.

She was cooking dinner one evening. They were blasting up on the ridge above. A boulder came crashing through the roof of her house, taking her and the stove through the floor down under the house. The company came next day to see what had happened. They gave her a new stove and two pieces of plywood—one to cover the hole in the floor, and the other for the hole in the roof.

I asked, "Is that all?" He answered, "Yes." "Didn't she press charges?" He answered, "It isn't any use. There aren't any lawyers you can turn to."

Rufus McCoy agreed, "You can go to a lawyer and he will listen to your story. But in the end he will say, 'I'm sorry, I can't possibly take your case. I am retained by that coal company.'"

Another serious and tragic effect strip mining has on people which I think is the most serious of all, is that it turns mountain people against mountain people. Those who are adversely affected find themselves pitted against those who are employed to strip mine.

Certainly one reason there has not been stronger resistance by mountain people is because those who suffer from the ill effects of strip mining have relatives who benefit by it. They are afraid that if they speak out, a relative will lose his job. Mart Shepherd's two sons could not get jobs in Knott County, Ky., because of their father's stance against strip mining.

One man on Brushy Ridge in Dickenson County, Va., has a son who operates a bulldozer on a stripping operation. His son states emphatically, "I don't like it. But I have to. My family has to eat."

There is nothing more demeaning to put on a man than to tell him the only way he can put bread on his children's table is to destroy his own land and his neighbors, too. Even his own father's.

Appalachia, a region noted for its beauty, its peace and serenity, has become for so many one of mental anguish and harassment. Blasting, or shooting as it is often called, dramatizes what I mean.

Blasting from strip mining operations reverberates with such force that it blows Bryan McCowan's front door open. As he puts:

> It is nerve rattling, the door flying open, the dishes crashing to the floor, the windows rattling—even cracking—and the roof beginning to give.

Bryan's father Jim, in his late sixties states:

> I've seen so much. I can't lay down and sleep at ease any more. The blasting, and rocks flying down the mountain, even onto the roads and where people live. Then there's the rain. When it comes, we get nervous and afraid. It makes a wreck out of a lot of people. Our government people don't help. No, they are helping to destroy this county, and lots of counties like this one.
>
> I grew up and lived all my life here. I want to die and be buried in these hills and I don't want to be dug up and thrown down the hill. It's like living in fear of the atomic bomb. There ought to be some way to stop it.

People are told, "Well, if you don't like it, why don't you leave?" In response to such questions, Elmer Rasnick of Clintwood, Va., retorts:

> It's like they want to put us on a reservation somewhere. Like they did the Cherokee Indians. When they say things like this, it makes my blood boil. Why should I move, or have to? This is our land. Our home.

More and more of what is happening is described in terms of a war on the people and their land. One eastern Kentucky man expressed it in these words: "They have declared war, and we are the enemy."

This war against the people and their region is expanding at a fantastic rate. For example, in just five counties of southwestern Virginia: Wise, Dickenson, Russell, Buchanan, and Tazewell, strip mining has grown from 96 operations in 1968, to 299 in 1971. By the end of 1972, to 384 operations; and to 509 operations as of a few weeks ago. This translated into the number of acres of land stripped reads 2,700 acres in 1968; 5,300 acres stripped in 1971; and 6,500 acres surface mined in 1972.

But the full impact does not end there. In 1971, the Legislature of West Virginia employed the Stanford Research Institute to do a study of the effects of strip mining in that State. One of their findings was that in the mountain region of Appalachia, for every acre of land stripped, 3 to 5 adjoining acres were directly and adversely affected. If this multiplier of 3 to 5 to 1 is applied in Virginia to the number of acres stripped, then for 1972, somewhere between 26,000 and 39,000 acres of land were affected; and for the 5-year period from 1968 through 1972, 80,000 to more than 120,000 acres of land were affected, and virtually all of this in just five counties of Virginia. To understand what is happening in this five-county area of Virginia is to begin to understand what is happening in scores of counties throughout Appalachia.

With every expansion of these operations the war widens. Not only are vast areas of additional land laid to waste at rapidly accelerating rates, but more and more people are brought under its cruel and hazardous effects. Short of resorting to violence these people are powerless to stop the onslaught of the strip miners.

The only way I know of to stop the strip miners from coming on their land was at the point of a gun. This incredible warfare can only be stopped if Congress will act. Congressmen right now are the only ones who can save these people from such cruel and callous injustice.

It is unjust and wrong to allow this sacrifice of land and people for whatever purpose, to whatever God. It certainly is not the God who

has created with such love this earth of ours, nor is it He in whose image are created those whose lives are laid on the sacrificial altar.

Why is it that in this great and wealthy and powerful land of ours we allow to happen to our people and our land what no country in Europe allows? The only possible reason I can see is the profit factor. In Germany and England where they do some strip mining, no surface mining is allowed in the mountains, only on flat and gently rolling land. And then, they pay the full price of restoration, back to its original state of productivity, whatever that cost may be. Under the best of circumstances they will pay from $4,000 to $9,000 per acre. Strip-mined coal in these countries is a premium coal, not mined for profit. They also only strip for coal what is scarce on the market.

The tragic wrong in this issue is that we do not have to strip mine coal, certainly not in the mountains, if at all anywhere. There is plenty of coal that can be deep mined for several hundred years. Ninety-five percent of our total recoverable reserves can only be deep mined, using present technology. Eighty-eight percent of low-sulfur content coal needed for powerplants can only be deep mined.

I want to be perfectly clear; I fully recognize the need for increased coal production to meet our energy and fuel needs. But, it does not have to be obtained by strip mining. It is simply a matter of expanding our deep mining, which would employ 4 to 5 times as many miners. And, it is a matter of making our mines safe and healthy to work in. That will cost more, but it will cost nothing compared to the cost of human suffering and loss which powerless people are being forced to absorb with little or no restitution. And furthermore, the cost will be nothing compared to what every American taxpayer will have to pick up in order to put our land back in shape for any future useful purpose.

I urge this committee to adopt legislation that will abolish strip mining or regulate it by standards at least on a par with England and Germany. I know that this would require a period of transition, but it could be quickly achieved in the mountains. Coal stripped in the mountains represents less than a quarter of the total production of surface-mined coal.

I would strongly urge the adoption of measures such as are contained in Representative Ken Hechler's bill, H.R. 1000. This bill calls for the phasing out of mountain strip mining in 6 months and of all trip mining in 18 months. It also provides for assistance and training of those seeking new employment.

Certainly all possible must be done to assist those displaced from jobs, just as we do for our returning veterans of war. But also like war, we do not want to continue it simply to keep people employed.

This warfare against the people and the land must stop. Love America, and stop strip mining.

Senator METCALF. Thank you very much.

Reverend LLOYD. Mr. Chairman, I would like to bring to your attention two films, about 20 minutes each, which I would urge your committee to see.

The first is "The Stripping of Appalachia." Mr. J. W. Bradley of Petros, Tenn., zip code 37845, will, I am sure, be able to show this film. It was produced by an English film company about strip-mining operations in Tennessee, which is owned by an English company.

The second film, "Appalachian Strip Mining," has been prepared by the Appalachian Film Workshop in Whitesburg, Ky., and by Mr. Phil Ronan of Wise, Va. Mr. Ronan is a Roman Catholic lay brother who has lived for many years in Wise and Dickenson Counties. He knows intimately the people of the region. I would urge that you have him come and show this film which focuses on the effects of strip mining on people as they tell it.

Finally, I would like to submit copies of a report prepared by three Holins College students with the assistance of Dr. Helen Lewis, professor of Sociology at Clinch Valley College and Dr. Mary Houska, Professor of Economics at Hollins College. This report is an analysis of interviews made in forty-two households in Wise, Dickenson, and Buchanan Counties, located in the proximity of stripmining operations.

Senator METCALF. That material will be received and incorporated into the record as part of your statement immediately after your regular statement.

[The prepared statements of Mr. Lloyd and material submitted follows:]

TESTIMONY BY THE REV. R. BALDWIN LLOYD AT HEARINGS OF
THE INTERIOR AND INSULAR AFFAIRS COMMITTEE, UNITED STATES SENATE

Mr. Chairman and Members of the Committee:

Coming before you is a new experience for me, but an opportunity I appreciate very much.

My name is Baldwin Lloyd. I am from Blacksburg, Virginia, where I have lived since 1958. I am an Episcopal priest working as the Executive Director of the Appalachian People's Service Organization (APSO)--which is the Episcopal Church's Appalachian regional work. This work takes me throughout eight Appalachian states. I am quite familiar with the region and the problems of stripmining.

Part of my present work is with the Commission on Religion in Appalachia (CORA)--which is the cooperative effort of seventeen Church denominations. Specifically, I direct CORA's Operation Coal Mining Project. Also since January of this year, I have served as chairman of the Appalachian Coalition--which represents groups and organizations concerned about the ill effects of stripmining.

Today, I will address my remarks solely to the effects stripmining has on people in Appalachia, many of whom I have come to know personally. To me, the most critical aspect of stripmining is what is happening to people and to the quality of their lives.

I would like to add, however, that I am quite aware of the need for mining coal and for its increased production.

I do not live where stripmining occurs. But I spend from one-third to one-half of my time travelling in the region where it does occur. I have come to know intimately people in southwestern Virginia, West Virginia, Kentucky and Tennessee--people who are directly and adversely affected because of this devastating process of mining.

In spite of the efforts of many of these people to be heard, their testimonies are rarely voiced at hearings such as this one. When tours are made by state and federal legislative bodies to investigate the effects of stripmining, rarely, if ever, are the opinions solicited of the people living in the proximity of the operations.

I hope very much such persons will have the opportunity to be heard by you this year. I know that you are interested in hearing from every possible source of expertise. The real experts on the subject of the effects of stripmining on people are those to whom it happens. The best I can do is to share with you what I have witnessed and what I have learned from some of these people.

The impact stripmining is having on people was graphically demonstrated at a mock trial against stripmining conducted by mountain people--from Virginia, Tennessee, Kentucky, West Virginia and Ohio. They came to testify--to speak to their grievances and about the injustices perpetrated against the people of the region. For too long they have felt ignored by their state capitols and the capitol of their nation.

The trial itself speaks of the frustrations people in the mountains experienced. Getting no sympathetic ear from governmental authorities at the local, state or federal levels, these persons tried to draw attention to their problems by means of the mock trial. Expressed throughout these testimonies were pleas to put an end to stripmining, which was threatening to wreck their lives--and those of future generations yet to come.

At that trial, a Rufus Brooks was to testify. Rufus Brooks is from Breholm on Buffalo Creek, Logan County, West Virginia. At that time, nearly three months before that tragic disaster of February 26, 1972, which all but destroyed 14 communities along the seventeen miles of Buffalo Creek, Rufus Brooks predicted impending disaster in this hollow--not because of the dam that might break (though he was well aware of that sinister danger) but rather because of the effects from stripmining. Bulldozers were busily at work on the mountains that hang over either side of Buffalo Creek hollow. From June through the fall Breholm and Ammersdale were hit over six times by a sea of mud washing down off the mountains. Homes were flooded and damaged. Rufus spoke of "mud up to my knees under and all around my home."

These hollows and mountains have been the home of these people for generations. Life may have been rugged, even harsh, and marginal, but life had a quality of completeness about it. However, with the advent of timbering and then coal into the region, this quality of life and its mountain culture became severely threatened.

The coming of stripmining has caused the most ruthless attack yet to be put on the people and on their land. Central Appalachia, where stripmining prevails, has become a land that resembles the battlefields of war--where the people are the victimes, and the land becomes a waste.

Those who drive through the area, or fly over it, can not help but be aghast at what they see. But it is more than just an "eye-sore". The beauty and value of the mountains just in themselves must not be discounted, though. As one coal miner told me, "When a man finishes a day's work underground, the one thing he should have the right to is to enjoy our beautiful mountains unscarred. But it tears you up to see what they're doing to our land."

Much of Appalachia is becoming a region where it is increasingly hazardous to live, to work or to raise a family. Within my lifetime I have seen beautiful sparkling clear mountain streams and rivers turn to streams that run black and brown, filled with silt and acid. No longer are these streams able to support life within them, nor serve the needs of man. According to Aubrey Caudill of McClure, Virginia, The river that runs near my home is so thick with mud you couldn't drown in it, but you might suffocate!"

Jim Cowan lives at the foot of Brushy Ridge in Dickenson County, Virginia. Pointing to Coon's Creek which runs past his mobil home he says, "You see that creek out there? There was a time it was so clean you could drink from it: my wife could do our washing in it. Now it isn't fit for a hog to drink from. Not even a crawdad can live in it.

"There was a time you could find water anywhere in these hills that was clean and fresh to drink. Now water on the mountains is about all gone and what is left is mostly polluted."

As Rufus McCoy who lived on top of Brushy Ridge discovered, even digging a well is no guarantee that one will have water. Rufus, who was a retired school teacher and twice elected to the Virginia House of Delegates, told me last fall, "I have gone to a lot of expense to dig a well to get water. But stripminers blasting some 2000 feet away have sunk my water system."

Appalachia is a region blessed with water--with a heavy rainfall. But this blessing is turning into a nightmare for more and more people in the region of stripmining. With the heavy rains come landslides carrying mud, rocks and trees down the mountains, bringing terror and destruction upon the folks who live below.

Not only are thousands of miles of streams and rivers and lakes and ponds rendered dead and useless, but when the rains come they have become the source of much to fear. Last April in eastern Kentucky, thirty-four counties were declared by the governor to be disaster areas. Not all of these counties are where stripmining takes place, but most were. The areas of most severe destruction to property occurred where there is stripmining. Many people were marooned for as long as three or four days in Knot and Perry Counties. Landslides blocked the roads that went up to their hollows and flooding waters washed out bridges. Homes were flooded and damaged by what is now all too familiar a sight to an ever-increasing number of people--a quagmire of mud, rocks and trees washed down from the ever-unstable spoil banks. Spring gardens were lost; many gardens, top soil and all, were washed totally away.

Mart Shepherd of Lotts Creek in Knot County, Kentucky, relates, "My six children had to wade to school through mud. Often the roads are closed; there are days the mailman can not make his delivery. I used to live on the side of a mountain; now it's all level and it floods under my house--$3000 damage has been done to my home. I tried to sue, but the company who did it had gone out of business."

"There are 350 families up Lots Creek who are all affected by stripmining in one way or another. It just isn't right." Mark Shepherd estimates that as many as a third of the people in Knot County suffer from stripmining's ill effects.

Mart sums up in these words what I hear from more and more people in the mountains today: "We do not live in a society. We live in a madhouse!"

And it does not matter which state it is in, or what laws the states have or don't have--the story is the same wherever there is stripmining--be it in Tennessee, Ohio, Pennsylvania, Kentucky, West Virginia, Virginia--the story tells aboutthe same madness.

It is the kind of madness that I hear parents speak of: "When day-long rains come, we fear to go to bed. We don't want harm to come to our children."

It is the kind of madness that Tom Austin recounts of his sister-in-law who lives in Dickenson County, Virginia. He tells of her narrow escape from death: "She was cooking dinner one evening. They were blasting up on the ridge above. A boulder came crashing through the roof of her house, taking her and the stove through the floor down under the house. The company came the next day to see what had happened. They gave her a new stove and two pieces of plywood--one to cover the hole in the floor, the other for the hole in the roof."

I asked, "Is that all?"

He answered, "Yes."

"Didn't she press charges?"

He answered, "It isn't any use. There aren't any lawyers you can turn to."

Rufus McCoy agreed, "You can go to a lawyer and he will listen to your story. But in the end he will say, 'I'm sorry, I can't possibly take your case; I am retained by that coal company.'"

Another serious and tragic effect stripmining has on people is that it turns mountain people against mountain people. Those who are adversely affected find themselves

pitted against those who are employed to stripmine. Certainly one reason there has not been stronger resistance by mountain people is because those who suffer from the ill effects of stripmining have relatives who benefit by it. They are afraid that if they speak out, a relative will lose his job. Mart Shepherd's two sons could not get jobs in Knot County, Kentucky, because of their father's stance against stripmining.

One man on Brushy Ridge in Dickenson County, Virginia, has a son who operates a bulldozer on a stripping operation. His son states emphatically, "I don't like it. But I have to. My family has to eat."

There is nothing more demeaning to put on a man than to tell him the only way he can put bread on his children's table is to destroy his own land and his neighbors too--even his own father's.

Appalachia, a region noted for its beauty, its peace and serenity, has become for so many one of mental anguish and harassment. Blasting, or shooting as it is often called, dramatizes what I mean. Blasting from stripmining operations reverbrates with such force that it blows Bryan McCowan's front door open. As he puts, "It is nerve rattling--the door flying open, the dishes crashing to the floor, the windows rattling--even cracking--and the roof beginning to give."

Bryan's father Jim, in his late 60's states, "I've seen so much. I can't lay down and sleep at ease any more. The blasting--and rocks flying down the mountain, even onto the roads and where people live. Then there's the rain--when it comes we get nervous and afraid. It makes a wreck out of a lot of people. And our government people don't help--no, they are helping to destroy this county, and lots of counties like this one."

"I grew up and lived all my life here. I want to die and be buried in these hills and I don't want to be dug up and thrown down the hill. It's like living in fear of the atomic bomb! There ought to be some way to stop it!"

People are told: "Well, if you don't like it, why don't you leave?" In response to such questions, Elmer Rasnick of Clintwood, Virginia, retorts, "It's like they want to put us on a reservation somewhere--like they did the Cherokee Indians. When they say things like this it makes my blood boil. Why should I move, or have to? This is our land! Our home!"

More and more of what is happening is described in terms of a war on the people and their land. One eastern Kentucky man expressed it in these words: "They have declared war, and we are the enemy."

This war against the people and their region is expanding at a fantastic rate. For example, in just five counties of southwestern Virginia (Wise, Dickenson, Russell, Buchanan and Tazewell) stripmining has grown from 96 operations in 1968 to 299 in 1971; by the end of 1972, to 384 operations; and to 509 operations as of a few weeks ago. This translated into the number of acres of land stripped reads 2700 acres in 1968; 5300 acres stripped in 1971; and 6500 acres surface mined in 1972.

But the full impact does not end there. In 1971, the legislature of West Virginia employed the Stanford Research Institute to do a study of the effects of stripmining in that state. One of their findings was that in the mountain region of Appalachia, for every acre of land stripped, three to five adjoining acres were directly and adversely affected. If this multiplier of 3 to 5 to one is applied in Virginia to

the number of acres stripped, then for 1972, somewhere between 26,000 and 39,000 acres of land were affected; and for the five-year period from 1968 through 1972, 80,000 to more than 120,000 acres of land were affected--and virtually all of this in just five counties of Virginia! To understand what is happening in this five-county area of Virginia is to begin to understand what is happening in scores of counties throughout Appalachia.

With every expansion of these operations the war widens. Not only are vast areas of additional land laid to waste at rapidly accelerating rates, but more and more people are brought under its cruel and hazardous effects. Short of resorting to violence these people are powerless to stop the onslaught of the strip miners.

This incredible warfare can only be stopped if Congress will act. Congressmen right now are the only ones who can save these people from such cruel and callous injustice.

It is unjust and wrong to allow this sacrifice of land and people for whatever purpose--to whatever God (it certainly is not the God who has created with such love this earth of ours; nor is it He in whose image are created those whose lives are laid on the sacrificial altar).

Why is it that in this great and wealthy and powerful land of ours we allow to happen to our people and our land what no country in Europe allows? The only possible reason I can see is the profit factor. In Germany and England where they do some stripmining, no surface mining is allowed in the mountains--only on flat and gently rolling land. And then, they pay the full price of restoration, back to its original state of productivity, whatever that cost may be. Under the best of circumstances they will pay from $4,000 to $9,000 per acre. Stripmined coal in these countries is a premium coal--not mined for profit. They also only strip for coal that is scarce on the market.

The tragic wrong in this issue is that we do not have to stripmine coal, certainly not in the mountains, if at all anywhere! There is plenty of coal that can be deep-mined for several hundred years. 95% of our total recoverable reserves can only be deep-mined, using present technology. 88% of low-sulphur content coal needed for power plants can only be deep-mined.

I want to be perfectly clear; I fully recognize the need for increased coal production to meet our energy and fuel needs. But it does not have to be obtained by stripmining. It is simply a matter of expanding our deep mining (which would employ 4 to 5 times as many miners); and it is a matter of making our mines safe and healthy to work in. That will cost more--but it will cost nothing compared to the cost of human suffering and loss which powerless people are being forced to absorb with little or no restitution. And furthermore, the cost will be nothing compared to what every American taxpayer will have to pick up in order to put our land back in shape for any future useful purpose.

I urge this committee to adopt legislation that will abolish stripmining or regulate it by standards at least on a par with England and Germany. I know that this would require a period of transition, but it could be quickly achieved in the mountains. Coal stripped in the mountains represents less than a quarter of the total production of surface-mined coal.

I would strongly urge the adoption of measures such as are contained in Representative Ken Hechler's bill, HR-1000. This bill calls for the phasing out of mountain stripmining in six months and of all stripmining in eighteen months. It also provides for assistance and training of those seeking new employment.

Certainly all possible must be done to assist those displaced from jobs, just as we do for our returning veterans of war. But also like war, we do not want to continue it simply to keep people employed!

This warfare against the people and the land must stop!

Love America, and stop stripmining!

* * * * * * * * * * * * *

Mr. Chairman. I would like to bring to your attention two films, about twenty minutes each, which I would urge your committee to see.

The first is THE STRIPPING OF APPALACHIA. Mr. J. W. Bradly of Petros, Tennessee (zip code 37845) will, I am sure, be able to show this film. It was produced by an English film company about stripmining operations in Tennessee, and which is owned by ~~the~~ English ~~film~~ company.

The second film, APPALACHIAN STRIP MINING, has been prepared by the Appalachian Film Workshop in Whitesburg, Kentucky and by Mr. Phil Ronan of Wise, Virginia. Mr. Ronan is a Roman Catholic lay brother who has lived for many years in Wise and Dickenson counties. He knows intimately the people of the region. I would urge that you have him come and show this film which focuses on the effects of stripmining on peole as they tell it.

Finally, I would like to submit copies of a report prepared by three Hollins College students with the assistance of Dr. Helen Lewis, professor of Sociology at Clinch Valley College and Dr. Mary Houska, Professor of Economics at Hollins College. This report is an analysis of interviews made in forty-two households in Wise, Dickenson and Buchanan Counties, located in the proximity of stripmining operations.

SOME BASIC QUESTIONS RELATIVE
TO STRIPMINING

1. Production Percentage - At present over 50% of coal production comes from surface mining. A year ago it was 44%. Yet coal production has not increased apprciably if at all over the past year. It simply indicates a real shift to surface mining from deep mining. This shift, unless altered, will continue, as it is estimated that by 1980 as much as 83% of coal production will be from surface mining, and this along with a considerable increase in total coal production expected by then. Yet only about 5% of the total recoverable coal reserves can be surface mined, using present technology. 95% of recoverable reserves can only be deep mined.

2. Production Costs - The issue is one of profit. It is cheaper to stripmine than to deep mine. The average labor cost for one ton of coal is about 80¢ for stripmining. The average labor cost per ton of deep mined coal is about $2.25. Yet the cheaper fact of production has not meant cheaper coal for cheaper electricity or steel, etc. By the time strip-mined coal reaches the open market, its price is the same as deep-mined coal. In fact, it is impossible to determine what might have been strip-mined coal from deep-mined coal. Most of the time they are processed through the same tipples. An exception would be in the case of "captive mines," those owned by the user of the coal.

3. Employment
   a) More deep miners have already been put out of work than would be if stripmining were abolished. And if the shift were made back to deep mining, many times as many persons would be employed. Deep mines employ 3 to 4 times as many persons.
   b) Safety/Health - The real issue is whether the coal industry is willing to make deep mines safe and healthy. At present little is being done to make them so. Understandably, it would cut into profits. The American coal industry still operates by inferior health and safety standards as compared to European and other developed countries. Its death and injury rates are the worst, with the exception of Canada, most of whose mines are owned by American companies. Safety and health regulations will not be rigidly enforced or strengthened appreciably until strip mining is banned, or ceases to be done for profit.
   c) Alternative Employment - Stripmining precludes the development of resort area industries, recreation, etc. as well as other new industries coming into the region. It destroys the possibility of alternative employment. Stripmining employment will only be temporary. Alternative employment could be permanent.

4. Land - Reclamation/Restoration
   a) For every acre industry claims has been improved due to stripmining and reclamation efforts, tens of thousands of others are laid to waste. Furthermore, in mountainous areas, for every acre of land stripped, three to five acres of land are directly affected and lost (Stanford Research Institute study made for West Virginia State Legislature in 1971-72.)
   b) Industry at present only assumes a fraction of the total cost of reclamation (not to be mistaken for restoration). There is rarely if ever anything comparable to restoration to original value or use as is required in England, Germany, or in Australia. England and Germany allow no mountain stripmining, only on level or rolling land. In the best of conditions they pay $4,000 to $9,000 per acre to restore land to its previous conditions of productivity. In the U.S., in the worst of conditions, rarely is as much as $1500 per acre spent; usually much less than $500 per acre.

5. People - Who will be able to assume the loss and cost people have personally suffered to themselves, their property, their communities--to the region itself? At present, neither industry nor government has done so. The only heavy out-migration of people from Appalachia between 1960 and 1970 corresponds with those areas being heavily stripmined. (U.S. Census 1970 figures) Many people describe what is happening as warfare against the people and land of the region.

6. Other Natural Resources - No adequate attention has been given to the effect stripmining has on other natural resources, such as water, timber, watersheds, wildlife, natural gas, top soil, farm land, etc. Often these are all but lost.

7. Acceleration - The rapid acceleration of stripmining is increasing at an alarming rate the adverse effects on people and land. Example of rapid rate of increase:

In Virginia, by 12/31/68 - 96 operations
by 12/31/70 - 158 operations
by 12/31/71 - 299 operations
by 1/31/72 - 384 operations
by 6/30/72 - 434 operations
by 1/31/73 - 509 operations

In Virginia in five counties over the last 3 to 5 years there has been an average of 5000 acres stripmined. In 1972 there was close to 6500 acres. Most of this is in 3 of the 5 counties where most stripmining occurs. The picture is pretty much the same in other counties throughout Appalachia where stripmining occurs.

8. Power Needs/Energy Crisis - Power companies report that they need cheap and low-sulphur-content coal. Power companies and coal companies imply that stripminig is essential to supply this coal.

a) Much strip-mined coal is not low-sulphur content coal (in Southern Ohio, northern West Virginia, Maryland and Pennsylvania)

b) Only 12% of low-sulphur-content coal is recoverable by stripmining. 88% can only be deep mined, using present technology.

c) By the time strip-mined coal reaches the open market, the price is the same as deep-mined coal; in fact it is impossible to determine which is stripped and which is deep-mined, as most goes into the same tipple. Only power companies or steel companies owning their own mines or mining operations would be in a position to pass the savings on to themselves and the public. There is certainly no evidence that any savings is being passed on to the public from the power companies. Quite to the contrary, most utility companies in the name of increased coal costs are seeking to increase their rates.

9. Corporate Responsibility - It seems quite clear that neither industry nor government regulatory agencies are able or have any inclination to assume responsible standards for surface mining practices.

a) Industry has opposed effective legislation - Industry and politicians who support industry's position, have consistently opposed legislation--even moderate to weak legislation. There is little evidence of adequate restoration of land. Industry has been allowed to define "reclamation" rather than professional environmental technicians. Reclamation is most situations seems to mean to grade, smooth over and get something to grow.

b) Industry has heavily influenced, even controlled, public hearings and legislative committees. Government public hearings at state and federal levels don't hesitate to hear industries' spokesmen, but have not readily included persons living in the region adversely affected by surface mining, nor professionals such as water quality and control, forestry and wildlife people, soil conservationists, sociologists, economists, psychiatrists. There has yet to be a thorough,

comprehensive study of the effects of stripmining which includes all aspects of the problem. Yet this process of mining has been practiced now for at least twenty-five years, and in the last five years has accelerated at an alarmingly fantastic rate with ever-increasing adverse effects of people and land. Still there is resistance to such adequate studies. Government study committees (such as appointed in Virginia by the Virginia Advisory Legislative Council to study the effects of stripmining in Virginia) are usually heavily loaded with supporters of weak and ineffective legislation and virtually no professional, environmentally concerned technicians and no members representative of the persons and communities adversely affected. It is incredible that an industry has been given such free license to operate with such devastating effects without even yet having any knowledge of what the full extent of the effects will be, for the present, or how far into the future!

10. Corporate Collusion/Environmental Blackmail?

The Nixon Administration has indicated that in order to meet the energy crisis needs, it would recommend a relaxation of some state air pollution control standards to permit use of higher sulphur content coal, and an increase of stripmining. A few days following this announcement by the President's office of Emergency Preparedness (OEP) a heavy resurgence of advertisements on TV, radio and newspapers by the coal industry in West Virginia began--statements such as, "when coal is in trouble, you are in trouble." Simultaneously, power companies in West Virginia, the Ohio Power Co. and Appalachian Power Co. (both subsidiaries of American Electric Power Company) stated that because of the problems of coal in West Virginia, low-sulphur-content coal will have to be imported into West Virginia--plenty of which can be obtained in southern West Virginia and Southwestern Virginia by deep mining. Yet within a few days of that announcement, trains began to arrive with low sulphur-content coal from Montana!

What's going on?

All of this seems to be an acceleration of a scare campaign to stampede the American public to back off--or, if possible, even gain public support for a total relaxation of pollution controls and the right to continue and to accelerate present stripmining practices.

Prepared by:
R. Baldwin Lloyd, Director
Operation Coal Mining
The Commission on Religion in Appalachia

3/8/73

A Study on the Effects of Strip Mining

Nancy Linder
Amy Koch — Hollins College
Kristine Pustay
Helen Lewis — Clinch Valley College

Introduction

I would like to tell you about a strip mining study we have been engaged in, in the coal mining areas of southwest Va. The purpose of this survey was to study the effects of strip mining on people living near a strip mine. In this study 42 households have been interviewed in Wise, Dickenson, and Buchanan County.

In this strip mining study 54% of these families lived within one-fourth of a mile of a strip mine. The head of each family was classified into one of three groups: 14% were under 30 years of age, 43% were middle aged, 43% were retired. Fifty-seven percent (57%) of the people have lived in the community all their lives. Over 90% of these people have no plans to leave the community in the future. Their mobility is practically non-existent since their kinship and cultural ties are so strong in the mountains. Their financial status is also a major drawback in moving from the area. Forty-six percent (46%) of those interviewed were disabled, retired, or unemployed. For income they depend on black lung, pensions, social security, welfare or unemployment compensation. Of those working 65% are deep miners, 13% are strip miners and 22% are employed in other blue collar or white collar occupations.

Now I would like to talk about some of the specifics of the strip mining study.

First: General advantages of strip mining

These households were asked to specifically state what advantages, if any, surface mining has brought to their area. Sixty-six percent (66%) replied that there were no advantages to the community from strip mining. Of those that found advantages, the most commonly mentioned one was employment. Other people however, stated that no one was hired locally from their community by the strip mine operators.

Second: Improvements and Problems of Strip mining

A series of questions were asked about whether or not there were any improvements or problems resulting from the stripping operation.

	No Reply	No Change	Problems	Improvements	Don't Know
water supply-wells etc.	4	16 42.1%	22 57.89%		
flooding and pollution	3	16 41%	22 56%		1 3%
rock and land slides	5	19 51%	17 46%		1 3%
change to roads	2	11 28%	27 68%	2 5%	
changes to houses from blasting	4	16 42%	22 58%		
wildlife - game	7	7 20%	24 69%		4 11%
recreation and fishing facilities	15	12 44%	14 52%		1
land value and taxes		10 24%	13 31%	2 5%	7 17%

Only four people found any improvement from stripping. When asked what overall changes have occurred for the family, home, property, and/or community from strip mining, 70% said there were negative changes. The most often mentioned problem was the damage to roads. Several people mentioned how the coal trucks tore up the roads. In some places the strip miners had roads taken out so they could strip - leaving many people without easy access to their homes. One man responded with "the road conditions is one bad thing. Rammin' dozers on the road. They tore the phone lines out once. They pushed the phone pole down completely." (Bob Kiser - Turkey Branch)

The absence of wildlife was the second most common problem. The strip miners take away the wildlife's food and natural production. One man said that there "ain't none around here hardly - used to be lots of rabbits, squirrels, and birds. They're all gone." (Turkey Branch) Another stated that strip mining "destroys wildlife, used be plenty of game." (Bonhan - Inman)

Pollution, flooding, and blasting were also mentioned as problems. Pollution from the strip mines have killed off fish, "decreased fish in the dam, you can't swim there" (Mrs. Kenneth Mullins - Flat Gap). It has caused the water to be "black as the ace of spades" (Georges Fork), and "water runs out destroys game and wildlife and beauty of land making wilderness out of it. "Strip miners could care less about it - easy money." (Willy Vest - Brushy Ridge).

Blasting causes several problems. It shakes the foundations of the houses - sometimes causing broken windows or cracks in the walls. It causes rocks to fly - sometimes right thru the roofs of houses. Often the people are not warned before a blast. This is of prime concern to parents of young children since it is dangerous for children to be outside when blasting is in progress.

Blasting loosens rocks from their foundations which can later result in landslides. In some cases underground streams have changed their course due to blasting which causes wells to go dry or results in a limited supply of water.

Third: Complaints and Legal action

The households were asked if they had complaints or had taken legal action related to strip mining. Forty-three (43%) of those that answered had taken action. Some people did not express their complaints because they "felt helpless." (Mike Marsingill - Briar Branch). Another person felt that is would be useless to complain because "strip mining will never end." (George's Fork).

Fourth: Public Hearings

Seventy percent (70%) of the people who answered the question do you feel public hearings are helpful either had no knowledge of public hearings or had knowledge of them but felt they were not helpful. Many people are also afraid to testify at a hearing. One woman whose son had worked for a strip mining operation was afraid to be quoted since she felt it would jeopardize her son's job opportunities. Other people feel that it is futile to try and fight people with money. "If people would get together they would have more influence. But they dread getting beat. People don't want to get involved. Can't fight people with money." (Lena Dale - Wells Bottom). Another person said "people keep talkin about abolishing it but it will never happen." (Bonhan - Inman).

Fifth: Reclamation

The 42 families were asked how they thought reclamation had been carried out on the strip mine nearest their home. Sixteen percent (16%) could not answer since the strip mining operation was still active. Seventy-two percent (72%) of those who

answered felt that it was not carried out well. One man's evaluation was

> They didn't put enough seed or fertilizer on it to improve the land. They don't put back what they destroyed including fences. The feller up the hollow here had 80 or 90 feet of fence torn out that wasn't replaced. - Turkey Branch

Another woman said,

> They are suppose to reclaim the land but it hasn't done any good the mountains still look awful. (Bonhan - Inman).

Sixth: Personal Evaluation of strip mining

In conclusion we asked these people what they personally felt about strip mining. Five percent (5%) of the people felt that strip mining was good. Sixty-three percent (63%) felt that it was all bad. The others felt it was a necessary evil or good economically; but bad for the land.

In conclusion, we have found from this study that the majority of problems caused by strip mining operations are long term. In other words, these problems last well after the strip mining operation has been terminated. Unless the stripped land and the area of land affected is properly reclaimed, the people living around this area will continue to be affected by erosion, land slides, water polution, flooding, loss of wildlife, and loss of recreation areas.

The majority of people interviewed felt the long term problems were not alleviated by present reclamation. These long term problems must have concrete, practical solutions before strip mining can be allowed to continue. It is unrealistic to think that present and future generations can exist in such a hazard environment. If these people are to make their home in Southwestern Virginia, it is imperative that action be taken to find solutions. If there are no solutions, strip mining must be abolished. Therefore, we strongly support Senate bills number 425 and 923.

RESOLUTION - STRIP MINING
Adopted by CORA Board February 2, 1973

Against the background of the Statement of Concern on Strip Mining in Appalachia adopted by this Board on March 15, 1972, and in view of the increasing damage and disruption to persons, families, communities and the land itself caused by the expanding practice of strip mining in mountainous regions of Appalachia, and in view of growing evidence that State regulations are ineffective and that reclamation is generally a sham, the Board of Directors of CORA declares its conviction that the appropriate and effective solution to this problem is to be found in Federal legislation totally prohibiting strip mining where reclamation is not possible, feasible or enforceable, particularly in the mountainous areas.

To that end the Board authorizes its staff and calls on its constituent communions to work agressively in support of the principles embodied in H.R. 1000 (93rd Congress) in the form it was introduced.

2/2/73

(Statement of Concern on Strip Mining of March 15, 1972 adopted by CORA Board is attached.)

A STATEMENT OF CONCERN
on
STRIP MINING IN APPALACHIA
by
THE COMMISSION ON RELIGION IN APPALACHIA
(Adopted March 15, 1972)

* * * \

5. Does my position take account of and contribute to self-determination on the part of the people most directly affected by this policy decision?

6. Is my position one that contributes in the long run to the best interests of the American people and of mankind as a whole?

The Position of CORA

In the light of these criteria, The Board of Directors of CORA affirms the following as its considered position with respect to Strip Mining in Appalachia:

1. The effects of strip mining on the environment and on people living in the affected areas are important and constitute a moral issue.

2. Regulatory legislation, which is fair, uniform, enforceable and fully enforced is essential to protect the environment, the people and the communities affected and those operators who are ready and willing to assume responsibility for mining without damage to environment or people.

3. The legislation should, as a minimum, ban stripping where reclamation is not possible. It should require genuine reclamation wherever stripping is permitted.

4. Research should be pushed in search of less damaging techniques of mining and more effective reclamation techniques.

Conclusion

We pledge ourselves as members of the CORA Board of Directors, and we call upon all members of our constituent communions to undertake rigorously to apply such criteria as those stated above to the issue of continuing and expanding strip mining in Appalachia; and to act vigorously and responsibly in political support of the conclusions to which such analysis may lead.

MEMBERS OF THE COMMISSION ON RELIGION IN APPALACHIA: American Baptist Covention...American Lutheran Church... Christian Church (Disciples of Christ)...Church of God...Church of the Brethren...Episcopal Church...Friends United Meeting...Home Mission Board of the Southern Baptist Covention (SBC)...Lutheran Church in America... Lutheran Church-Missouri Synod...Mennonite Central Committee...Presbyterian Church, U.S.,...Reformed Church in America...Roman Catholic Church...United Church of Christ...United Methodist Church...United Presbyterian Church, U.S.A.,...Council of the Southern Mountains, Inc...Lutheran Council in the U.S.A.,...National Catholic Rural Life Conference...National Council of the Churches of Christ, U.S.A., and the ten state councils of churches.

CORA speaks only for itself. Views expressed in this statement are those of CORA as adopted by its Board of Directors. Nothing in the statement necessarily reflects the views of any of the member communions, councils or organizations.

Senator METCALF. As mentioned before these hearings have gone for 3 long days. There has been a great deal of repetition in these last 2 days of hearings All day yesterday, we have heard from environmentalists and ecological people. The day before, we heard from the American Mining Congress and a panel of mining experts from all over America. I would like to hear the next four witnesses. However, I am going to have to adjourn this hearing at 1 o'clock, as far as I am concerned, to make my panel meeting with the National Conference of Judges. Therefore, I am going to restrict the next witness, Mrs. Withers, and then if we get to the Colorado Mining Association—Senator Haskell has waited a long time—to 15 minutes each, unless there is objection from the committee.

Mr. Coen, you are recognized for 15 minutes. Can you summarize that time?

Mr. COEN. I think so. Thank you.

STATEMENT OF JAMES L. COEN, BLACKSBURG, VA.

Mr. COEN. Mr. Chairman and members of the committee, my name is Jim Coen of Blacksburg, Va. I am a staff associate for the commission on religion in Appalachia. Strip mining probably began in 1877 near Pittsburg, Kans. At that time overburden, soil covering a coal seam, was removed and coal was blasted and loaded into wooden mine cars. During this era, only shallow coal deposits were considered for surface mining. However, more advanced technology has brought those days to an end. Now, in this modern age, technology allows the coal mine operator to remove over 100 feet of overburden to get at the black diamonds.

Many, however, find this application of the technology one of mixed blessings. While the coal can be reached with less cost and effort, the destructive aspects of the industry are overwhelming and can no longer be ignored.

In this ecology-conscious era, strip mining has become one of the Nation's most controversial subjects.

If one is to have a realistic understanding of strip mining he must give consideration to all aspects of involvement.

The question of the power crisis is one of acute importance to this issue. Many qualified experts feel that this crisis is one which arose out of an intentional manipulation of the Nation's energy sources toward the increase of fuel prices and relaxation of Federal and State controls. If so, then the move has had the desired effect. The President is asking for a roll back of the Clean Air Act to allow power companies to burn high sulfur coal and oil. This is a boon to the electrical utilities which were disinclined to spend the extra money to put in the proper equipment such as scrubbers, to remove sulfur.

While it is true that strip mining is somewhat cheaper than deep mining, it is strip mining which yields the majority of the high sulfur coal. The increase in use of high sulfur coal is based on the erroneous belief that low sulfur coal is unavailable. There are numerous quantities of low sulfur coal available, but only by deep mining. Only 12 percent of the low sulfur coal is obtainable by strip mining. With

95 percent of the coal still available by deep mining methods, one must question the validity of an energy crisis.

It is a fact that approximately one-half of the large coal companies are owned by major oil companies. Some economists find that this allows for the manipulation of the coal prices and markets to allow coal to be an agent for the pricing and availability of all fuels. While liquid fuels, such as petroleum and natural gas have Federal pricing controls, coal is free to fluctuate as the companies see fit.

Economists feel that the companies see the newly discovered western coal reserve as that which will serve as the Nation's primary power source in the future. In the meantime, the industry is mining the Appalachian mountain coal reserves as quickly as possible before legislators realize the long-range damage potential and put a stop to contour mining. The energy crisis allows the companies to mine more freely through relaxed controls as well as to sell coal reserves where experts predict electrical power generators will be set up near the mines and power will be piped back even as far as the east coast. This will negate the need for most of the Appalachian region's coal resources. Then the mountains, or what is left of them, will be abandoned for brighter horizons.

It might also be noted that strip mining results in a complete loss of natural gas deposits in the mined areas, a commodity in very short supply.

Also, in terms of cost, while strip mined coal is cheaper to obtain, it is loaded into the same tipples for loading coal cars as deep mined coal. This cost reduction never reaches the public. The only ones who gain from strip mining are the mine operators and owners. Strip mined coal is only cheaper because reclamation is incomplete. If the companies were forced to live up to their responsibility, the cost would be equivalent or higher.

The only logical reason for stripping is the short-term profit motive. This shows a real lack of responsible interest towards our Nation's future needs. The increase in stripping is indicative of a continuation of this attitude. Many people feel that the large coal companies interfere with the political picture to the degree that the average citizen's opinion is hardly heard.

Recently, a bill was introduced to the House Committee on Mining and Mineral Resources in Richmond, Va., by Delegate John Melnick—Democrat of Arlington. Upon attending hearings numerous citizens found that the meeting had been moved up an hour. Furthermore, it was an additional hour late in convening. The legislators were tired by that time and allowed only 1 hour for those supporting Mr. Melnick's bill, which would place Virginia's strip mine laws in conformity with those of the surrounding States, to give their testimonies. Many people subsequently, were not allowed to testify, even after many of them had left work and traveled the length of the State to voice their opinions. In turn, the representatives of the coal companies were allowed, somehow, to testify beyond their hour's limit. The bill died in committee.

Consider the number of jobs lost as the conversion from deep mining to strip mining takes place. Deep mines employ three to four times the number of workers that strip mines do. Furthermore, the strip

mine operators frequently bring in skilled machine operators from outside the locale, which further detriments the local job situation. Deep mines are presently operating at only 70-percent capacity due to strip mining. If the production were shifted from strip mining back into deep mining, the waste factor of 30 percent could be sharply reduced and employment would improve, thus relaxing the need for welfare supplement.

According to the U.S. Bureau of Census, the only heavy outmigration of people in the United States corresponds directly with strip mined areas. The coal companies are displacing large quantities of people to cities where they will populate the slums to become enforced ghetto dwellers.

Furthermore, all of the highly skilled population, primarily between the ages of 18 and 34, must leave the area to find jobs commensurate with their abilities. Thus, the human resource element, like the natural resources, is leaving the area and the result is a depletion both in terms of people, minerals, and other natural resources.

The larger results of strip mining is that it negates many alternate forms of employment. The concept of tourist trade is negated in these areas. Recreation areas, which are quite prevalent in mountainous areas are virtually impossible to attain. Other industry is discouraged from coming to these areas because of the heavy outmigrations which have already removed a large portion of a possible labor force, particularly skilled labor. Also, the damage to roads due to overloaded coal trucks and the lack of a good water supply is often a strong consideration which deters other industry.

Farming is one of our Nation's most viable forms of employment. Strip mining almost completely negates farming due to land disturbance, erosion, mineral leaching of soil, acid pollution of water, and other factors. Also, timber production is down in strip mine areas below in strip mine areas below the average for comparable geographic regions.

Many of the strong arguments against strip mining are based on ecological consideration. Erosion is 1,000 times as great on strip mined land as under normal conditions. The Stanford Research Institute—SRI—tel's us that for every acre of land directly disturbed by strip mining, there are 3 to 5 acres adversely affected.

This is the primary cause of the siltation of streams which causes the capacity of the stream bed to lessen, resulting in flooding and property damage. The amount of erosion due to stripping has been conservatively measured by SRI to be 400 to 600 tons of sediment per acre. Not only does this lead to gully erosion but removal of topsoil by sheet erosion and leaching of minerals from soil, negating revegetation either immediately or in the foreseeable future. This totally removes any possibility of reclamation of land. Even if grass is planted before the soil is leached, this only retards sheet erosion and not gully erosion.

SRI found that, in West Virginia alone, two-thirds of attempted reclamation failed in terms of vegetative cover. Reclamation must be defined as the return of the land to its original level of productivity. If the industry is unable to meet standards of reclamation, as all research indicates is the case, it should not be allowed to continue with the destruction of the land.

Presently, the industry assumes only a fraction of the responsibility for reclamation. The rest of the burden rests with the taxpayer. Why should the public assume responsibility for the damage while the profit falls to the companies?

Strip mining exposes large quantities of pyrites which are responsible for the large scale of acid pollution of streams resulting in the killing of fish and wildlife. It is the high sulfur coal which strip mining exposes which yields the sulfuric acid and makes up a large portion of this acid pollution.

Stanford Research Institute delineates a 12-degree slope as the maximum for allowing a regrading to the original contour of the land and 20 degrees as the point at which landslides develop on spoil banks.

What are our alternatives if we are to avoid the ravages of strip mining? First, if strip mining is to continue on any level, reclamation must not be a mere cosmetic coverup. We need strong laws protecting the people and environment against future failure. Furthermore, we can, by making these laws retroactive, give consideration to the damage already done.

Some of the technical alternatives which are subject to consideration are as follows: Underground gasification of coal has been used in the U.S.S.R. and some small countries throughout Europe for many years. This method entails working in an underground shaft and exposing the seam of coal to an oxidizing agent which frees the gases for collection. These gases can be used in existing natural gas pipelines and heating facilities for home heating and industrial use.

This method leaves the ash in the pit, partially eliminating the problem of slag heaps, a problem encountered even with deep mining. This is particularly effective for high ash content coal seams. The gasified coal is readily treatable for the removal of sulfur and there is less chance of fires, less chance of roof collapse and the problem of acid pollution of water is greatly reduced. One of the most significant points about this method is that there is around 90 percent recovery of coal as opposed to the present 60-percent recovery rate.

The consideration of nuclear powerplants is in high priority with the Atomic Energy Commission. There are geothermal powerplants which tap the heat from the Earth's core presently working in different parts of the world to produce electrical power. There are several geographic locations in the Midwestern United States where this method is quite feasible. Also, the Sun's power represents a tremendous potential which can be harnessed with the proper technology.

Already there are plans to launch a satellite which will convert solar energy into microwaves to be piped back to the Earth's surface. Giant windmills have been constructed to provide electricity. This method has proven economically and technically feasible. Tidal power is also available by building dams with narrow inlets to use the tidal flow as we now produce hydroelectric power on our rivers.

Appalachia is being manipulated by outside interests with the very minimal in economic remuneration for its valuable resources. Appalachia must be allowed to diversify its economy before the coal companies are through with it and leave only the mountain skeleton to bake in the Sun. Save the mountains now while they are worth the saving.

In summation, it is my belief that the State governments often find themselves either unwilling or unable to deal with the problem which stripmining presents. The failure of the Virginia Legislature to pass even a minimal regulatory bill this session is quite indicative of this situation. When our State officials fail to provide for the needs of their constituency, we must turn to our Federal Government for relief. Such is the case now. We implore you to act on this issue quickly and strongly before the devastation passes the point of no return. You are our last hope. Thank you.

Senator METCALF. Thank you very much.

[The prepared statement of Mr. Coen follows:]

TESTIMONY BY JAMES L. COEN AT HEARINGS OF
THE INTERIOR AND INSULAR AFFAIRS COMMITTEE, UNITED STATES SENATE

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It might also be noted that stripmining results in a complete loss of natural gas deposits in the mined areas, a commodity in very short supply.

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Senator FANNIN. I am sorry I was not here to hear your full testimony. I know you have great concern as we all do over the protection of the environment. I am just wondering if you would apply the same regulations to the Western States, or to be specific, to the Navaho Reservation. The area of Four Corners where they do have level ground that many of year statements would apply. Would you apply the same regulations to those areas?

Mr. COEN. Well, to be honest, my expertise such as it is, is limited primarily to the situation in the Appalachian region. Whatever information I do have, leads me to believe that the depth of topsoil, which is only a few inches in these regions, the minimal moisture content, minimal rainfall and the instability of the soil in this region could lead to a situation which might produce a dust bowl, I question whether reclamation is really feasible in these areas.

Senator FANNIN. Well, I wish you had the opportunity to travel to Arizona and see what is happening outside of Page. When you refer to what is taking place, it is for different than what you describe here. That is why I say I don't think a condemnation of strip mining is in order unless you have been able to investigate other parts of the country. I share the concern as far as I have seen as what has been happening in some areas of the country, but I don't think we should have a blanket condemnation, do you?

Mr. COEN. I didn't intend to state so in this opinion. I discriminate primarily between contour mining and surface area mining.

Senator FANNIN. You say that the only ones who gain from strip mining are the mine operators and owners. That is a blanket indictment. Strip-mined coal is only cheaper because reclamation is incomplete. In this area where domestic water is abundant, double the level land is available after reclamation. A much better chance for production on the land. Seems apparent, since it, of course, is very barren now. Unless Mother Nature provides less than regular rainfall, we can expect as much growth as we have ever had. Although too much for the immediate future cannot be expected there is a greater chance for them to eventually have more productive land. This land will be more level and will yield more advantages. I say this, too, with respect to your comments about incomplete reclamation. This is not a fair statement to me.

Mr. COEN. I would have to limit that statement again to my studies of the economics in the Appalachian region.

Senator FANNIN. In other words, you would like to limit your complete statement to your observations in the Appalachian area?

Mr. COEN. I think that would be fair.

Senator FANNIN. Thank you.

Senator METCALF. Thank you, Senator. Senator Haskell?

Senator HASKELL. Gentlemen, I can only say that you have illustrated the absolute necessity here of adopting a law such as is embodied in S. 425. I thank you both for your testimony.

Mr. COEN. Thank you.

Senator METCALF. Senator Hansen.

Senator HANSEN. Mr. Chairman, I am sorry that I, like Senator Fannin, was not able to be here for your statements. We have had a Finance executive session going too, this morning. We have been trying to cover both bases. Because of that, I was denied the oppor-

tunity of hearing from you, sir, which I would have liked very much. Knowing a little bit of your testimony, I would just like to comment, Mr. Coen, as Senator Fannin has to some extent, that I think your interpretation of motives, as you discussed the power crisis, might possibly be subject to some revision, at least in the context of one who comes from the West to speak about the high sulfur coal and the thrust of those who talk about a power crisis. If left in the desire to lower or to delay the imposition of these higher standards, I want to say that Wyoming's coal, and I think it is also true of Montana's, is very low in sulfur. It is lower in sulfur than much of the residual fuel oil that comes into much of this end of the country. Yet, we are very much concerned, too. I am sure we want to have an adequate law passed. But, I don't think you don't actually say that this is fact. The question of the power crisis "is one of the acute exponents to this isssue. Many experts feel that this crisis is one which arose out of an intentional manipulation by the Nation's energy sources toward the increase of fuel crisis and relaxation of Federal and State controls."

Because of a relatively low price of the natural gas, there just hasn't been enough to go around. There hasn't been an effort that I would say is sufficient to keep up with the increased demand for natural gas to assure that there is an adequate supply. As a consequence, coupled with the imposition of the Clean Air Act, the conventional fuels, which now to some degree have been replaced by natural gas despite their relative abundance, can't be burned.

It ought to be pointed out that with schools closed and with many crops rotting in the Midwest, that we are high in moisture and that supplies of natural gas are not available to operate driving equipment. With waterway transportation many times brought to a virtual halt because of the lack of diesel fuel, and with the railroad switch engines not able to operate simply because there wasn't adequate supplies of diesel fuel, I am one who believes that we do have a real energy crisis. The statements I make can all be documented.

I am sure those persons whose homes have been closed, and persons working in factories that were shut down because there wasn't enough energy to have them operating might share my feeling. Whether you do or not, of course, certainly is your privilege. But I wanted to say that it seems to me this is a pretty complicated issue that doesn't lend itself to simplistic resolution. I just can't quite agree that this energy crisis is a manipulation that was manufactured by the energy crisis.

Mr. COEN. If I might give an answer to that, briefly, I agree that we do have the present energy crisis, such as it is, but my question is, do they not have the foresight to realize that these problems will arise, or are the deep mines presently operating at only 70-percent capacity. Where the low sulfur coal is available and with these energies available underground, will we advance our technology to take care of this in advance instead of waiting until it reached a crisis stage, when in effect, we have experts that must have been aware of the situation.

Senator HANSEN. Who must have been aware of it?

Mr. COEN. I say we have experts both in the energy field and in administration who must have been aware of the impending danger.

Senator HANSEN. And whose responsibility would it have been, in your judgment, to have anticipated this emergency and to have done something about it?

Mr. COEN. I think at least part of the responsibility must fall to the industry.

Senator FANNIN. OK.

Senator HANSEN. I suspect that most people in this country look to what we may call free enterprise and the profit motive as providing a stimulus for most of our activities. Are you suggesting that the energy companies are not also guided and persuaded in their actions by this same desire to make a profit?

Mr. COEN. No, sir. I don't question that at all. I believe the question here would be inherent. The inherent situation might be based on the fact that, as I mentioned, many of the major coal companies are owned by oil companies, and holding companies.

Senator HANSEN. That is lately becoming true.

Mr. COEN. Yes, and I question whether there isn't some cooperation—now I have no real method of evaluating this per se—but I question whether there isn't some cooperation in terms of the long-range effects of the manipulation of fuel crisis. Admittedly, they may take a loss in the immediate future, but the long-range effects of this remain to be seen.

Senator HANSEN. It's possible there may be better ways than the profit motive in geting things done. I happen to believe in it. I think that there is adequate documentation to prove that there have been officials in Government going back to previous administrations, including this one, and there have been plenty of people in industry who have been able to predict what will happen.

There are others on the other side.

Senator METCALF. Thank you very much Senator Hansen.

Senator McClure.

Senator MCCLURE. Thank you very much, Mr. Chairman. I have a whole list of questions here, but in view of the time I am going to shorten them as much as I possibly can, and still get into several areas that I think are important to get into. One, by way of background, and in order to assist me in evaluating your testimony, Mr. Coen, what is your background by training and education?

Mr. COEN. Actually my training consists primarily of a degree in psychology and a degree in arts. I relied on several resources for my information. I am well acquainted with economists and mining engineers and I have several resources available to me as I live in the university community.

There is a very good library available.

Senator MCCLURE. Thank you very much. Reverend Lloyd, I think you have had a very, very choicy statement on behalf of the people that are your concern in that area. I think it sharpens our interest and certainly underscores the need for legislation. I appreciate it and I am also very mindful of the necessity of having the means by which the people can speak for themselves, though a spokesman like yourself provides a very valuable function. But they can never take the place of people actually expressing their own feelings. We must somehow develop that mechanism. I think you are very right in pointing up their

frustrations and lacking a forum in which they can express directly how they feel about, what their experiences have been, and what they like to see done.

I hope we can develop that along with others attempting to do that. I know when I was in the House, we had several contacts with groups of people that, one way or another through Congressman Hechler's office and Congressman Teague's office, have been here. We did make it so they could. But there are some areas of problems that I think need to be explored.

One that has already been referred to in regard to a rather suspicious attitude on your part—it may be well rounded suspicions—that coal companies are simply trying to pad their profits. Is that based upon a hard study of their constant operations, their busing methods, or is this just kind of a feeling that surely they must be exploiting the area?

Mr. LLOYD. Well, I think that one thing is that there is virtually no tax in most States from a single ton of coal that is mined there.

Senator MCCLURE. Even though they might be taxed, the tax is only one aspect of their cost. If indeed, the price takes into consideration the cost of operation, the absence of presence of a tax would not necessarily have anything to do with the profit margin.

Mr. LLOYD. I have a very good report by an economist and I think probably you also heard Dr. Miernak's testimony, but I think that when you see the cost of coal, say from a deep mine—something in the neighborhood of $9 and by the time, for instance it reaches a European market or a market in Japan being in the neighborhood of $23 a ton—it is a tremendous amount of margin in that.

Also, in terms of strip mining, the cost of the labor cost are about 80 cents per ton as against $2.25 for deep mining. And yet when it reaches the market the price of coal is pretty much the same. In fact, it is almost impossible to differentiate between what has been strip mined and what is coming from the deep mines.

Senator MCCLURE. Coal companies have testified that they blend the coal in the strip mined coal in order to achieve a market price which is competitive. So, the explanation might lie in that testimony rather than in the suspicion that they are trying to hide something.

Mr. LLOYD. Well, there has been more than a doubling in the price of coal in the last 5 years.

Senator MCCLURE. Almost everything else has gone that way too.

Mr. LLOYD. You know, I think there is a lot of relationship between that, but I think also—and this is something where I don't have sufficient figures—but I do know that in 1971 the corporations, like the Penn-Virginia Corp. had a very fat profit. If GM, or any of those companies, had a kind of profit that Penn-Virginia Corp. had, they would really have had a banner year.

Senator MCCLURE. Well, profit margins are a very difficult thing to measure. There are a lot of ways, and they say that figures don't lie, but liars can figure. There are a lot of different ways that you can feed the same statistical information and come up with different results, where you are, depending on your own biases or your own methods. But things vary so much.

Adequate averages, for instance North Dakota strip mines, coal averages about $1.91 per ton in terms of mined slate price and at the

same time in Ohio, the bulk of which is surface mined, the cost is $5.24 per ton. The Pennsylvania, which is 40 percent surface mined and 60 percent mined, the cost is $8.52 a ton. So, it is almost impossible to draw averages because the situation and the circumstances vary so much. That is the reason I asked the question whether your testimony here with rather pointed criticisms of the coal companies' profit margins was based on any real analysis of all the variations that go into the pricing?

Mr. LLOYD. I guess my criticism is not so much—I recognize that our system operates on the necessity of profits. I guess, what I would like to see in terms of the motive behind our policies on strip mining would be those operated by countries like England and Germany where if the full cost of restoration of the land back to its full productivity is assumed, it would make a profit prohibitive. The strip mined coal in Europe is a premium coal and it is recognized that it is a necessity to put a high priority on the surface land use and on the effects on people than they do on extracting that mineral.

I think that is what I am really arguing for and I think you know that if we would operate by that kind of standard and motivation, you know I would feel reasonably safe about strip mining. But until we do, I have some real misgivings.

Senator MCCLURE. I understand your position. I was just trying to sharpen it a little bit because attached to your statement, or with it, were a couple of documents one of which is entitled, "Some Basic Questions Relative to Strip Mining." Your item No. 2 says in its lead sentence, "The issue is one of profit."

Mr. LLOYD. I think it is, because our country operates on, you know this is the way really our system operates, so that I think.

Senator MCCLURE. I understand your point in that context, but just a quick reading of this would indicate that you are indicating that the coal companies are profiteering and making excessive profits which I am not sure is necessary supported by facts that you have presented to us. It again, comes up in another place on the same page in item No. 4 where you are talking about cost and the cost of reclamation. For instance, we have had some testimony that the cost of adequate reclamation, and this came from environmentalists and not from coal companies, would average something like a dollar a ton perhaps, which it might or might not be. Like $4,000 to $9,000 per acre that you are talking about, depending on the thickness of the seam and the quality of recovery per acre.

But then you go again into item No. 10 on the same line about conclusions. It seems to me you show a basic suspicion rather than a basic trust toward our direction and social priorities. I am trying to separate those two as best I can.

Another factor that is involved I think the both of you have indicated, we ought to direct our mining back underground. Where there are some unused capacity, there will be a lot more employment, and I was struck by the study attached by Nancy Linden of Hollins College, in which they show that 43 percent of the people interviewed were retired, and then later they gave another statistic which shows 46 percent are disabled, retired, or unemployed. The difference between those figures would indicate the 3 percent were disabled or unemployed. That isn't a very high percentage for those unemployed, and certainly does

not give the basis of any kind of a large labor pool available for going back underground, which isn't to say that—but it does say that there is something wrong with it.

Mr. LLOYD. I would say that probably those who were retired may also be disabled, but we need to do much more, sir than interviewing on this basis. This is one of the things that you know, that there has been no real study made of who the people are, who are affected, and how they are affected, in the real social culture. I think that so many of the people who live up the hollows and on the ridges where strip mining occurs, are people who are older and aren't very able to move easily. One of the reasons why there aren't more young people is because of the lack of employment and of their having to leave the region.

Senator MCCLURE. I am sure that is true, and that is true of many areas. Of course, that is another question that is interrelated and affects a great many areas of the country other than just coal mining. One question that comes up specifically in several references in both your testimonies to the SRI study, in which they indicated and in most instances in your testimony you have so stated, 3 to 5 acres of land might be directly affected for a every acre of land mined. But, in page 1 of your questions that I have put before you say they are directly affected and lost. My question is whether that, "and lost" is really an accurate statement?

Mr. LLOYD. I don't remember that, but it doesn't sound like what I would mean. I think it has to do more with the adverse cost that it has on land off the strip mining itself.

Senator MCCLURE. I appreciate that and I appreciate the clarification. Mr. Coen, you refer to the possibility of expanding supplies by the oxidation in place mine, of coal beds. There are some very unanswered questions with respect to that technology and the subsidance effects of such beds is that not correct?

Mr. COEN. Yes, I believe that is true and what I was advocating was primarily the increase in research to advance this technology.

Senator MCCLURE. And where is this money coming from for the increase in research?

Mr. COEN. Well, I understand that the administration is budgeting a large sum for this particular study.

Senator MCCLURE. How much is enough?

Mr. COEN. That is a good question.

Senator MCCLURE. And if indeed, we have a budget choice of priorities as we have now, at what expense in the budget would the additional research come? And, if we question the profits that profits that are made by coal companies, how are they going to put money into research? Are there some taxing policies that ought to be examined or perhaps allow or direct him to channel our money into research out of the internally generated?

Mr. COEN. I think taxation is probably one good priority problem. That is one of the questions in the local situations with the taxation to put some more money back into the region. I think that any time the industry is going to have this brought into effect. I think taxation is quite a viable approach.

Senator MCCLURE. Mr. Chairman, there are many, many more things that I would like to ask that I think would be very valuable to

us and I wish we had more time. I think, in view of the time, that I will cut it off there. Thank you very much.

Senator METCALF. If you want to continue your interrogation.

Senator MCCLURE. We must get on. Thank you.

Senator METCALF. Thank you.

Mr. LLOYD. Thank you very much.

Senator METCALF. I really want to comment that I think that it is a happy circumstance that your testimony, especially highlighting some of the personal problems of the people in your area, appeared right after the testimony of the two preceding witnesses who deplored any legislation at all. Probably the record will make the comparison of the two.

Senator HASKELL. Gentlemen, would it be a fair summary of your testimony that you are not attacking the profit motive, you are merely saying that social and other considerations should be taken under consideration at the same time? Is that a fair summary?

Mr. LLOYD. Absolutely.

Mr. COEN. Yes.

Mr. LLOYD. I think that is my major concern. If we are motivated as Europeans are about this matter, I think we will be in good shape.

Senator HASKELL. Thank you.

Senator METCALF. Thank you all. Senator Haskell has been waiting here for the appearance of the two Colorado witnesses. I will call them, now, and I assure Ms. Withers, that I am going to stay around and listen to you, if we can get through by 2 o'clock.

However, at the conclusion of this testimony, and the testimony of Ms. Withers, I am going to adjourn the hearing until 2:15, at which time I will leave it to my colleagues who will reconvene this afternoon.

Now our next witnesses are from the Colorado Mining Association. I recognize the Senator from Colorado, Senator Haskell.

Senator HASKELL. We are delighted to have you here, gentlemen. I see there are three of you. Mr. Cole is listed, Mr. Ferry is listed.

STATEMENT OF DAVID COLE, PRESIDENT, COLORADO MINING ASSOCIATION

Mr. COLE. Mr. Haskell, I am Dave Cole, and Mr. Ferry, due to the press of business, could not make it, and here with me from Denver, Mr. Harold Ballard, chairman of the Colorado Mining Industrial Board, and Mr. Al Hoyl, the president of the Colorado Mining Association.

Senator HASKELL. We have met before. I am delighted to see all three of you.

Senator METCALF. Gentlemen, I want to admonish you that this is an extra day of hearings. We have had extensive testimony from the American Mining Congress, the mining people, especially directed at mining problems of the West, and I urge you to touch upon the very high points that you want to stress as part of your testimony.

Mr. COLE. This is what we plan to do, Mr. Chairman.

First of all, on behalf of Mr. John Ferry, I want to express his apologies for not being able to appear here because of this last minute business affair, and I do wish to submit his statement for the record,

which deals with the financing of new operations with special regard to the term of permanence in section 207 of S. 425.

Senator METCALF. Yes, his testimony will be a part of the record immediately after the formal testimony that you give, and I reiterate that all testimony will be incorporated in the printed record as if read, and that is with the usual admonition that if your summary is longer than your regular testimony, then we print the summary.

Mr. COLE. Thank you.

Mr. Chairman and members of the committee, I am David R. Cole, secretary and manager of the Colorado Mining Association. I am also president of the Colorado School of Mines Alumni Association, and I wish to acknowledge the earlier discussion about Arizona School of Mines and so forth.

Senator METCALF. We take judicial notice of it.

Mr. COLE. Yes, I think I would be remiss if I didn't mention it.

The association is a voluntary trade association, founded in 1876 and incorporated in 1897. Its membership, numbering 108 companies and 1,450 individuals, is composed of both large and small mining enterprises, manufacturers and distributors of mining and processing equipment and supplies, commercial banks and other institutions serving the mining industry.

In 1972 there were over 600 active minerals operations in Colorado, employing in excess of 11,200 persons at the primary production level.

I would like to call your attention to the surface area involved with mining in Colorado. The State has a total area of approximately 67 million acres; 819,000 acres of national forest are being managed to maintain their wilderness resources and 600,000 acres are under consideration for wilderness status as a result of the Roadless Area Review and Evaluation, this evaluation included only minimal consideration of mineral potential.

These 1.4 million acres constitute 2.08 percent of the State. In contrast, the acreage needing treatment as a result of all types of mining in the State is 40,200 acres or 0.06 percent.

Ore deposits concentrated by nature millions of years ago are simply found where they are. Ore can be mined only where it is found and requires a minimum of surface related to the whole. From these figures it can be seen that mineral deposits are rare indeed, and one should not conjure up visions of strip mining problems in Appalachia when considering the regulation of entirely different types of mining.

The Colorado Mining Association declaration of policy adopted February 10, 1973, is as follows:

Physical location of mineral deposits dictates mining methods. We favor the return of mined land to additional use and support Federal legislation realistically designed to assist the States and the mining industry to achieve this.

Legislation which encourages the States to develop their own regulations based on broad Federal criteria provides the most effective way of insuring this objective.

Before adoption of guidelines or regulations, provision should be made for public notice, comment by interested parties, and the recommedation of an advisory committee; surface mine legislation should define reclamation as return of disturbed lands to a condition presenting reasonable opportunity for future beneficial use.

Because of the diversity of environment in which ore-bodies are found, we support legislation which encourages the States to develop their own regulations.

In Colorado alone, the physical environment is unusually diverse. Elevations range from 3,477 feet at Julesburg, to 14,431 at the peak of Mount Elbert; annual precipitation from 7 inches at Garnett in Alamosa County, to 37.4 inches at Savage Basin in San Miguel County.

The growing season at Fraser averages only 17 days, while Grand Junction averages 191 days. This diversity results from extremes in topography, complex weather patterns due in a large part to topography, and the native vegetation with its long history of responses to environmental change.

Physiographically, about two-fifths of Colorado is in the Great Plains Province, an area of rolling hills and plains recently formed from the deposition of materials eroded eastward from the mountains.

The western three-fifths of the State is in the southern Rocky Mountain Province and is characterized by a mixture of high mountains, high mesas and plateaus, narrow to broad valleys and large upland parks. The geology of the western area results from a complex system of mountain building and erosion, which includes uplifts, peneplanation, block faulting, and volcanic flow.

Currently, mined land reclamation in Colorado is governed by the surface lands stabilization provision of the Colorado mining law passed in 1969, and the Open Cut Land Reclamation Act of 1969, amended in 1972, applying to the surface mining of coal.

This extreme diversity makes simplistic guidelines such as "returning land to its original contours" impossible, especially when solid rock is removed from mountainous terrain.

The stabilization provisions of the Colorado mining law take into account the diversity of the State's environment by recognizing that it is unwise to establish rigid rules and standards governing the reclamation of lands disturbed by mining.

Mine operators are asked to submit to the Colorado Division of Mines a plan for the reclamation work to be undertaken as part of the operation.

This approach places responsibility for developing adequate reclamation, stabilization and control techniques upon the operator, permitting utilization of the operator's experiences. It emphasizes operator initiative, innovation and experimentation.

No permit is required prior to mining activity, but notice of commencing activity is required. The Colorado Department of Natural Resources has reported to me that since the passage of the act, almost twice as many acres have been reclaimed as have been disturbed.

We respectfully submit this approach for your consideration.

The Open Cut Land Reclamation Act recognizes the differences between the surface mining of coal and other mining operations in Colorado.

We respectfully submit this approach to your attention and consideration.

We believe that there is a pending materials shortage in addition to the current energy supply situation. In the March 5, 1973, Wall Street Journal it was reported:

Soaring prices and raw materials shortages marred an otherwise "robust" business scene during February, according to the latest survey of 250 members of the National Association of Purchasing Management.

The survey said members indicated that new orders and production might have been even better but for capacity limitation, energy curtailments at some plants and shortages of key materials in general.

In short supply were zinc, castings, capacitors, diesel fuel, fuel oil, natural gas, propane, lumber and lumber products, bearing, paper and paper products, resins, benzene, soda ash, caustic soda, titanium dioxide, waxes, forgings, and hides.

We cannot further curtail the flow of these building blocks of our standard of living. The materials, if they are to be available at all, must be mined.

Most deposits of metalliferous minerals occur in extremely low grade deposits. In order to provide the metals from these deposits at reasonable prices to the ultimate consumer, large volumes must be mined in the most economical manner.

This method most often is open pit or in the case of deeper deposits some form of block caving. We do not believe that paragraph 212(c) adequately covers surface disturbance caused by intentional caving.

In addition, this provision should be made absolute. Only the investor and operator, not the Secretary, can properly make this decision.

In closing, I would ask that you carefully weigh the impact of reclamation legislation that is proposed not only on the environment, but on the supplies of raw materials without which our standard of living could not exist.

We in general endorse the comments on specific sections of the act made by the American Mining Congress, but would like to reserve the opportunity to make written comments on any amends or redrafts which may result from these hearings.

I want to thank you for the opportunity to express the views of the Colorado Mining Congress on the legislation under consideration.

As of this time we have only recently received copies of S. 923 and are not prepared to comment but we would be glad to forward our comments to the committee.

Senator METCALF. Thank you very much for your testimony. I assure you that we will welcome any further comments on other specific legislation and will be in communication with you and your organization as we draft the final section of the bill.

And I mentioned that there was a considerable amount of duplication and so forth, but I have learned a new word—peneplaination, as a part of your testimony.

Mr. COLE. That is one of the words I left out.

Senator METCALF. You have made a contribution to us this afternoon. Thank you very much.

[The prepared statements of Mr. Cole and Mr. Ferry follow:]

The Colorado
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STATEMENT

ON BEHALF OF THE

COLORADO MINING ASSOCIATION

BEFORE THE

SENATE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

PRESENTED BY

DAVID R. COLE, SECRETARY AND MANAGER
AT HEARINGS IN WASHINGTON, D.C.

CONCERNING SURFACE MINING RECLAMATION

MARCH 16, 1973

PREPARED BY

ENVIRONMENTAL PROTECTION COMMITTEE
OF THE
COLORADO MINING ASSOCIATION

Mr. Chairman and members of the Committee, I am David R. Cole, Secretary and Manager of the Colorado Mining Association. The Association is a voluntary trade association, founded in 1876 and incorporated in 1897. Its membership, numbering 108 companies and 1,450 individuals, is composed of both large and small mining enterprises, manufacturers and distributors of mining and processing equipment and supplies, commercial banks and other institutions serving the mining industry. In 1972 there were over 600 active mineral operations in Colorado, employing in excess of 11,200 persons at the primary production level.

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building and erosion, which includes uplifts, peneplaination, block faulting and volcanic flow.

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and control techniques upon the operator, permitting utilization of the operator's experiences. It emphasizes operator initiative, innovation and experimentation. No permit is required prior to mining activity, but notice of commencing activity is required. The Colorado Department of Natural Resources has reported to me that since the passage of the Act almost twice as many acres have been reclaimed as have been disturbed.

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In closing, I would ask that you carefully weigh the impact of reclamation legislation that is proposed not only on the environment, but on the supplies of raw materials without which our standard of living could not exist.

We in general endorse the comments on specific sections of the Act made by the American Mining Congress, but would like to reserve the opportunity to make written comments on any amends or redrafts which may result from these hearings.

I want to thank you for the opportunity to express the views of the Colorado Mining Association on the legislation under consideration.

STATEMENT

of

John H. Ferry, Vice President
United Bank of Denver
before the
Senate Committee on Interior and Insular Affairs
at hearings in Washington, D. C.
concerning Surface Mining Reclamation

March 16, 1973

Mr. Chairman and members of the Committee, I am John H. Ferry, Vice President of the United Bank of Denver. The United Bank of Denver is the largest mineral financing institution in the Denver, Colorado area.

In the view of a lender, anything that increases the cost to a borrower will reduce his credit worthiness, but costs can be analyzed in detail.

However, the provisions that concern me the most and which, I am sure, also concern the financial community at large, are in Section 207, Permits.

Under Section 207(d), the language is as follows:

> "A permit shall terminate if the Permittee has not commenced actual mining production on the surface mining and reclamation operations covered by such permit within three years of the issuance of the permit."

Whereas a three-year permit for commencement of production operations may be acceptable with respect to some coal mining operations, the Bill covers all surface mining operations, including typical open-pit operations for metallic minerals. In Colorado it is not uncommon to have pre-production development expenses for molybdenum deposits far exceeding three years. The same is true for porphyry copper deposits in

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Arizona and Utah. Also, iron and sizeable uranium deposits could also require pre-production investments exceeding three years.

Similarly, the same applies to Section 207(c) specifying the five-year renewable term. There should be an absolute right of renewal unless the Government demonstrates that the permittee is in substantial non-compliance with the reclamation program. Major mine ventures are barely under way after five years of operation. It is premature to expect significant reclamation in this period in many cases.

Under the circumstances presented by Section 207(c) and (d) of the subject Bill, it is unlikely that any prudent lender, either commercial bank, insurance company, or trust fund, would provide financing support for ventures as described in the paragraph above. Certainly, the provisions of Section 207(c) and (d) would be a factor in the credit consideration of open-pit project financing contemplated by this bank which on balance is likely to lead to a negative decision to extend credit. There is no doubt that the five-year requirement of Section 207 (c) or the three-year requirement of Section 207(d), if retained in the final draft of this Bill and thereafter signed into law, would be most damaging to mineral development owing to impairment of financing alternatives.

I want to thank you for the opportunity of expressing my views on the subject legislation.

Mr. COLE. Mr. Harold Ballard will be next.

STATEMENT OF HAROLD C. BALLARD, CHAIRMAN, MINING INDUSTRIAL DEVELOPMENT BOARD, STATE OF COLORADO DIVISION OF NATURAL RESOURCES

Mr. BALLARD. Mr. Chairman and members of the committee, I have a prepared statement which I will submit for the record. In the interest of time I will make some very brief comments related to it.

My name is Harold C. Ballard. I am chairman of, and am speaking in behalf of, the Colorado State Mining Industrial Development Board. This board is composed of active members of the mining industry in Colorado, appointed by the Governor. Its function is to advise concerning the problems and interests of the mining industry and encourage the development of a healthy industry.

The main thrust of this statement has to do with economics, the impact and importance on the economy of the Nation, State and particular localities of an active mining industry, and illustrations that are available to us of what these impacts can mean. In this context, while we recognize that mining must be conducted with due regard for environmental protection, that laws and regulations should recognize and to the extent possible accommodate the varying conditions that exist throughout the country in mining, and should take into consideration economics as well as ecology.

And I make reference in here just one more point that there is another concern throughout the Nation, particularly in Colorado, and that is with the need to decentralize industrial activity, to channel growth away from impacted metropolitan centers and into rural America, and the point that where the opportunity exists because of the presence of mineral deposits the production of which is needed, this is perhaps the best opportunity for providing economic revitalization in these areas that are available, and again with the regard for environmental protection.

Thank you.

[The prepared statement of Mr. Ballard follows:]

HAROLD C. BALLARD, Lakewood
Chairman

THOMAS E. CONGDON, Englewood
Secretary

JOHN A. LOVE, GOVERNOR

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MINING INDUSTRIAL DEVELOPMENT BOARD
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Statement of Harold C. Ballard, Chairman

Mining Industrial Development Board

State of Colorado

Division of Natural Resources

Presented before

U. S. Senate Committee on Interior and Insular Affairs

at Hearings in Washington, D. C., Concerning
Surface Mining Reclamation, March 16, 1973

Mr. Chairman and Members of the Committee:

My name is Harold C. Ballard. I am chairman of, and am speaking in behalf of, the Colorado State Mining Industrial Development Board. This board is composed of active members of the mining industry in Colorado, appointed by the Governor. Its function is to advise concerning the problems and interests of the mining industry and encourage the development of a healthy industry.

My purpose today is to speak concerning the economic importance of the mining industry, with particular reference to Colorado. Others probably have, or will, comment at some length on the importance to the nation of continued and increasing domestic production of mineral products to provide the raw materials and energy needed for the maintenance of the national standard of living, as an essential element of the national defence, and as an important factor in efforts to achieve a favorable balance of trade, so important to the nation's economy. Of equal importance is the impact of the industry upon the economy of states, regions and localities in which it operates in terms of employment, purchases of services and materials, and taxes paid to state and local governments.

The true economic impact in this sense has never been determined in Colorado. Typically, the data available have consisted of Bureau of Mines reports of the value of the mineral product and State Department of Employment reports of numbers employed in the industry. In Colorado, the product value, so reported for metals, industrial minerals and coal, is about $275 million, and the employment about 7,000. These date, however, do not represent the true impact of the industry on the State's economy. A study is in progress by the Colorado School of Mines, under contract with the United States Bureau of Mines, with the purpose of evaluating the various factors involved in making such a determination. The Mining Industrial Development Board, as well as the Colorado Mining Association, is cooperating with the school in the development of data.

This study has not been completed to the point where a full report of data and conclusions can be released. However, for a segment of the industry which accounts for more than one-third of the product value and mining employment, sufficient data have been developed to be indicative. In this segment, there is an annual payroll of some $28 million. $64 million is expended annually for machinery, equipment, supplies, energy, and contract and other services. $47 million of this amount is paid to Colorado residents or businesses. In excess of $4 million is paid annually in State and local taxes. These items, alone, amount to about $96 million. Of this amount, approximately $56 million are being spent in connection with current mine production. The remaining $40 million is being spent in development and capital investment for future production.

Much of the benefit of these expenditures flow into Denver and other commercial and industrial centers of the state. A significant portion is spread to manufacturing centers throughout the nation. But a very important portion, more than one-third, of the benefit is received by the local communities where the mining operations are located.

The latter is a significant aspect of the importance of maintaining an active and expanding mining industry. There is much concern today about the need to decentralize industrial activity, the channeling of growth away from impacted metropolitan centers and into rural America, in order to relieve population congestion and revitalize the rural areas. Mining is usually conducted in rural areas, where there is, otherwise, little other industrial activity. The existence of a mining operation can be very important to such a rural community.

A good illustration of this is that of a mine which was developed and put into production in one of Colorado's least populated counties within the last decade. Before the mine was developed, the county was very depressed. There was little business activity. Unemployment was at serious proportions. Local governments and schools were hard pressed to fulfill their functions with the inadequate property tax

base then available to them.

The assessed valuation of taxable property in the county was only $5.7 million. It is now $31.8 million. Property taxes levied and collected for local governments and schools were $407,000. Now, with enlargement of school facilities and improvement of county and town governments to meet heavier demands for services, $1.8 million are derived from property taxes. The total tax levy for county and school purposes was 62.25 mills. In spite of increased public expenditures, this total levy has now been reduced to 53.61 mills, a 20% reduction in rate. In the county's principal town, the total levy was 83.25 mills, is now reduced to 62.36 mills.

The county is now prosperous, its most pressing problem being a housing shortage. It has what is recognized as an outstanding public school system, housed in modern facilities. Its other public services have been upgraded and are being further improved. This is an outstanding example of how the problems of an economically depressed rural area can be solved by the existence of a viable mining industry, where the opportunity exists. And, in this case, the development and operation of the mine has been accomplished with a concern for environmental protection which has won national recognition.

The mining industry in Colorado recognizes that its activities must be conducted with such environmental concern. It is committed to conduct its activities with the least possible environmental damage. But it submits that a part of the environment is economics, as well as ecology. Laws, regulations and administrative decisions designed to govern its activities should be flexible enough to accomodate the greatly varying operating conditions that exist throughout the industry and cost-benefit factors should be given due consideration.

Respectfully submitted,

Harold C. Ballard

Senator METCALF. Thank you. Mr. Hoyl.

STATEMENT OF ALFRED G. HOYL, PRESIDENT, CORONADO SILVER CORP.; PRESIDENT, COLORADO MINING ASSOCIATION, AND CHAIRMAN OF THE ENVIRONMENTAL PROTECTION COMMITTEE OF CMA

Mr. HOYL. Mr. Chairman and members of the committee, I am Al Hoyl, owner and operator of a small independent mining company, Coronado Silver Corp., in Colorado.

I am also privileged to this year be president of the Colorado Mining Association. For the last 6 years I have been on the board of directors of the Colorado Mining Association and have served on the Environmental Protection Committee and am presently chairman of this committee. I am a professional miner with degrees in mining engineering and geology—geophysics.

I have worked for and with large mining companies and have plodded the hills like prospectors who opened the West. I have seen both sides of mining, big and little. I live in the mountains and am basically a mountaineer with a strong desire for the individual freedom and independence of man.

Those of us who live in the out-of-way places, the mountains, plains, and seas away from the big cities have a special interest in our environment and the beauty of our land. We also know that survival of our country and our people depend on the metals, fuels, fertilizers, and building materials we search out and produce. More often than not, the discovery, development, and production of a mineral project is a lifetime project.

Just summarizing what I have to say, basically I want to testify on behalf of the small independent operator. First, we are very much in favor of reclamation but we ask that a great amount of wisdom be brought to bear on this problem because this affects the future of our country as well as the future of our industry.

As for the small independent operator, we feel that we are extremely important in that we very often find and start mining projects that turn out into larger and more important projects. Also, we produce from smaller deposits which must be done to insure an adequate supply of metals, fuels, fertilizers and building materials.

Some materials such as silver and uranium can only be produced from small operations. We feel that the industry must have a supply of young, energetic, ambitious men to make it effective and we feel that if there is no place for an independent operator we will be discouraging many young men that might come into the industry.

Now, as far as this legislation affects the small operator, our point is that any restrictive points, and there are quite a few in these proposed laws, are far harder on the smaller operator than they are on the large operators. Where they might be able to survive some of these things, we wouldn't. Just in particular, the permit problem which allows challenges from almost anybody, would present a tremendous legal cost to a determined small operator in trying to be able to get an operation going.

Senator METCALF. Do you have a permit provision in Colorado?

Mr. HOYL. No, sir; Senator, we do not, we have a provision that we have to advise the start-up of any new operations and we have to submit a reclamation plan. As chairman of the environmental protection committee, most of our operating companies in Colorado have a reclamation plan, and I think these plans are good and I think they are going to work and our own Colorado Bureau of Mines is supervising this and carrying that out. I think we are doing a very good job in Colorado on this.

Senator METCALF. And there is a continuing inspection then by the State officials to see whether or not there is compliance with the plan?

Mr. HOYL. Yes, sir.

Senator METCALF. Pardon me for interrupting but I thought it would be appropriate.

Mr. HOYL. That is quite all right.

Also, we would like to point out that there is, even in a small operation there is a difficulty in financing and a short-term permit makes this almost impossible for us.

Also, the loss of time that would be involved in obtaining these permits would be very difficult for us.

There are also some provisions and areas of critical concern could be taken away, in effect, from us.

Now, we would have a very difficult time fighting such an action and even getting some of our money back that we may have spent on the project it could suddenly be declared a critical area and we would lose all of our efforts.

The vital thing is the attaining of bonds and we have found in the past, for instance, trying to work out OME assistance projects, that we just simply cannot get a bond for any length of time. The bonding company is very much like a bank, they are just not going to guarantee the existence of the small mining company or an independent operator for any length of time.

And, with all the absolutes that are indicated in these bills, I doubt if a small operator could get a bond at all. I personally have had absolutely no luck in doing this at all and something would have to be done about that or else the small independent operator is just going out of the mining business.

I think you are going to have to consider some sort of Government insurance or something like that that we all contribute to. But anyway, we want to do a good job on reclamation in Colorado, I think we are. We are all for drawing up a proper bill we urge on you extreme use of wisdom to make sure that this is done very well.

I certainly do appreciate the opportunity to testify here and add my comments to those of my distinguished colleagues. We go along with those comments, but we do again, point out that our own problems maybe are 10 times as bad as the bigger companies.

Thank you.

[The prepared statement of Mr. Hoyl follows:]

STATEMENT OF ALFRED G. HOYL

President, Coronado Silver Corporation; President, Colorado Mining Association and Chairman of the Environmental Protection Commitee of CMA

Presented before

UNITED STATES SENATE
Committee on Interior and Insular Affairs
at hearings in
Washington, D.C.
concerning Surface Mining Reclamation
March 16, 1973

Mr. Chairman and Members of the Committee:

I am Al Hoyl, owner and operator of a small independent mining company, Coronado Silver Corporation, in Colorado. I am also privileged to this year be President of the Colorado Mining Association. For the last six years I have been on the Board of Directors of the Colorado Mining Association and have served on the Environmental Protection Committee and am presently chairman of this committee. I am a professional miner with degrees in Mining Engineering and Geology -- Geophysics.

I have worked for and with large mining companies and have plodded the hills like prospectors who opened the West. I have seen both sides of mining, big and little. I live in the mountains and am basicly a mountaineer with a strong desire for the individual freedom and independence of man. Those of us who live in the out-of-way places, the mountains, plains, and seas away from the big cities have a special interest in our environment and the beauty of our land. We also know that survival of our country and our people depend on the metals, fuels,

fertilizers and building materials we search out and produce. More often than not, the discovery, development, and production of a mineral project is a lifetime project.

As I speak today, I represent for myself and for the many other small operators of CMA the small miner and as such a proper mining Reclamation Law is of vital concern to us. We do not oppose such legislation, but we urge the utmost wisdom in formulating it. Do not rush this legislation and do not fear the mining industry. Bear in mind that we touch less than 1/1000 of the land in the United States, that we wish to do a first class reclamation job. Be aware of the fact that people are the poluters, that if the price of our product includes reclamation we will be the first to reclaim and keep our mountains, streams and air clean and beautiful.

As small independent operators we strongly urge that your legislation make sure of our countinued endeavors. Most large operations started as small efforts. Most were found and started by independents. Our students study the mineral industry hoping in many cases to strike out on their own. Most of us do not want to work all of our lives for a big company or the government. We want to follow the great american tradition and produce the basic wealth of our country on our own.

As we contemplate the proposed bill, S.-425, we feel that though the intent may be good, the real problems of the industry are not considered and that its passage as written would mean the end of the small independent operator. We must be encouraged not discouraged, if our country is to advance, improve and survive as the best in the world.

We endorse the comments made today by our colleagues in the mineral industry. We emphasize that the defects in the proposed law will be at least ten times as hard on us.

We cannot survive the time provisions involved in obtaining a permit.

We must have time to develop and finance with no restrictions.

Bonding provisions eliminate us automatically as no bonding company will guarantee our project or our existence for more than a year at a time. I know. I have tried to get bonds before for a mining project. It simply cannot be done by a small operator for any length of time. Mining is a long term endeavor and starts only when there is absolute assurance that it can continue; that property and operating rights cannot be revoked. This is ten times as important to the small operator as to the large operation.

Again, we urge that our position in the essential mining industry be fully considered. We must be encouraged not discouraged. We must have a strong influx of talented and educated young men. They will not enter the industry if there is not independent individual opportunity available to them. We find and start the big projects as well as produce from the small ones. We are essential to the mining industry and therefore essential to the welfare of our country.

We above all want to preserve, conserve, and keep our environment beautiful -- help us to do this without destroying us. If we are strong our country is strong. Our country can never be a free prosperous country if only large conglomerates can operate the farms and industries. The place

of the small independent must be strengthened -- not eliminated.

We operate in one of the most beautiful parts of Colorado. We produce silver, one of the most useful and valuable metals known to man. We have a good reclamation plan, as required under Colorado laws. It is our firm intention to leave our part of the Mountains as beautiful when we leave as when we came.

We do not need further restrictions, we need the support under the Mining and Minerals Policy of 1970. We urge that support to mining be increased under this policy and, in particular, to the small independent miner.

Senator METCALF. Thank you very much, Mr. Hoyl. We appreciate your appearance here.

In drafting the final version of this bill, I assure you, we are going to heed your admonitions and certainly do as little detriment to your operations as possible.

I am delighted to see that you are concerned about the environmental aspects of the mining industry. I am glad that you intend to leave your part of the mountains as beautiful as when you came in. I want not only the western mountains of Montana which are very much like those in Colorado, but I want the plains of Montana, and the hills of Appalachia and the deserts of the Four Corners area also left with the same beauty that they had when mining came in.

Mr. HOYL. Senator, I think this is very possible and I think it just involves an adequate price to allow for this which has not been the case in the past.

Senator METCALF. Senator Haskell.

Senator HASKELL. I certainly do appreciate your coming and I am particularly interested in Mr. Hoyl's comments and I know the problem of the small company as opposed to a major company.

Would it be possible for any one of the three of you to submit to us in legislative language, suggestions that you may have on this bill?

As we all know, the three of you and myself, we are very much concerned in our State that our State be kept the way it is.

Mr. Hoyl, you are silver mining primarily, which is not—I presume you don't strip mine, it is deep mining; is it not?

Mr. HOYL. All of our mining is underground mining. However, this bill covers every part of mining and we will have the tailing problems. For example, we will have to replant and landscape, which we intend to do. We will probably put a good deal of our tailings back underground. The actual acreage that we affect as far as portals and shafts would maybe not even exceed an acre.

Senator HASKELL. I think it would be very helpful, I mean everybody has their unique problems. It would be helpful to us when we get around to putting this legislation in the form that the committee could agree on, to have actual suggested legislative language before us. And for that reason, in addition to your statements, if you feel so inclined we would welcome actual statutory language, maybe Mr. Cole, you could supply that?

Mr. COLE. Speaking on behalf of the association, Senator, we will do our best to supply you with information we can on the legislative language.

Senator HASKELL. Take Mr. Hoyl's problems into consideration while you are doing it.

Mr. COLE. We certainly will, he is our president; you can be assured that it will be taken care of.

Senator HASKELL. I see. Thank you, gentlemen, it was very nice of you to come.

Mr. COLE. Thank you.

Senator METCALF. Thank you for your patience, thank you very much.

The next witness is Ms. Withers from Billings, Mont., to present some of the impact on some of our western area. We are delighted

to have you here and are gratified that we have a witness representing your area.

Again, I admonish some summary although we are going to stay as long as you need to.

STATEMENT OF MS. ELLEN WITHERS, CHAIRMAN, NORTHERN PLAINS RESOURCE COUNCIL, MONTANA

Ms. WITHERS. Thank you, Mr. Chairman.

Gentlemen, in times past the mineral hoard of western Montana dominated the State and named it the "Treasure State;" in the last few years, the emphasis shifted to "Big Sky Country."

Now it seems that with the spectre of large-scale coal development looming on the horizon of the Big Sky, we may become the "Black Sky Country," or "Black Earth Country."

In 1971, the Montana Legislature enacted a surface mining reclamation act, which, with time and experience in its administration proved to be unsatisfactory.

The 1973 legislative session is wrestling with the problems of planning for coal development, including the regulation and taxation of what proposes to be a giant industry and probably a dominating force in Montana for years to come.

Four primary reclamation bills were introduced into the 1973 legislative session, two representing the philosophy of administrative discretion and two representing the philosophy of legislative direction and executive administration.

The bill which awaits the Governor's signature, S. 94, began as an administrative discretion bill, but was amended to become a much more directory bill. Partly because of this philosophical difference, S. 94 has certain awkwardnesses in the placing of responsibility for carrying out the legislative directives and some of the concepts removed from other bills were incompletely considered when they were inserted into the S. 94 context.

S. 94 is much better than the previous law, in that it does attempt to set up relatively specific standards for reclamation in Montana and that its permit data requirements will provide at least some hard data for the State Department of Lands to base their decisions on granting or denying permits.

The areas which I would criticize most severely are weaknesses in the areas of definitions, insufficiency of permit fee, cumbersome administrative organization, and lack of surface owner input into the reclamation proposals other than for "alternative" plans.

I also think that a minimum time not being set forth for which a bond must be maintained is a serious weakness for two reasons, first, State personnel may not be sufficiently experienced to know if the vegetative cover on the "reclaimed" land will meet the act's requirements, and second, through pressure from the companies, the State may be prone to release a bond sooner than it should.

When a coal company reclamation expert publicly admits in response to questioning that it may be anywhere from 5 to 25 years before "reclaimed" land can support livestock grazing, one can realize the pressure that may result far earlier than should be bond release.

S. 94 gives good consideration to the underground water factor which is so important to us in the west. The bills currently before this committee deal primarily with water in an eastern sense.

In relation to the bills presently before this committee, I have one or two criticisms of faults common to both bills—the first is that by covering all minerals being extracted from the surface, I think the legislative branch is being too general in the authority which it is granting to the executive branch and the legislative branch is avoiding the detail work; this is particularly true of S. 923, which seems to be the standard regulatory bill form slightly altered to fit minerals. In my opinion S. 923 delegates entirely too much authority to the Secretary of the Interior.

If the legislative branch does not get specific, the Secretary is also entirely too apt to deal in euphemisms such as "large scale surface disturbance" when he really means unvarnished "strip mining."

S. 425, for an all minerals bill indicates that much more time and thought have gone into its composition; however, I think that it would be wiser to place the mining of certain types of minerals and certain kinds of reclamation problems arising in conjunction with those minerals in separate bills in order to more specifically guide the Secretary in his administration of reclamation procedures.

I do not like the combination of land use and reclamation in S. 425, and I cannot help but wonder if this is a back door approach to get a national land use policy. If so, I do not approve. If there is to be a national land use policy, that policy should be debated fully and openly on its own merits and not swept in under the carpet of reclamation.

Senator METCALF. We have had a long series of hearings on the national land use policy. The chairman of the committee is the author of a rather extensive bill. We are going to have some more hearings.

It is programed as high priority in this committee just as this enactment of surface mining bill is, but while they are comparable and somewhat overlap, I assure you that we are going to have every consideration of your concern for complete and separate consideration of that land use policy.

Ms. WITHERS. Thank you, Mr. Senator.

Currently in Montana, those of us who live in areas which have Federal coal are the subject of Bureau of Land Management studies on its land, its minerals, our land, and ourselves. Being one of the bugs on the end of the pin, I have attended several meetings concerning what the BLM will do with the end of the pin.

To date about the only hard information about the end of the pin that I was able to glean, was that under managed conditions our area, that is the Bull Mountains, which is my personal home, will grow a saw log in 120 years.

At this point in time the BLM is basically basing their multiple use decision on "data gaps." Nor is the State of Montana any better informed about us at this time. S. 425, section 215 deals with making grants to the States for land use planning, but there is no provision, at least not specifically, for the granting of money to the States in order to obtain the scientifically sound information upon which the States are to base such decisions.

S. 923 has one sound provision, and that is that the companies regulated should be charged for defraying the cost of regulations; however, it may not be possible to administer a bill like S. 425 entirely on the costs and charges of fees paid by the permittee. But, I don't think it is a bad idea to have some contribution from that end.

S. 425 represents an advance in legislative thinking over last year with the provision in section 410 relating to surface owners. At common law, the mineral owner was obligated by the duty of subjacent support, and in many States he is still under this duty. Therefore, it is possible that section 410, subsection (b) without intending to do so abrogates the doctrine of subjacent support in the United States.

If it is not the intention of the draftsman to do that, the application of subsection (b) should be limited to those States which have destroyed that duty owed by the mineral owner or to those particular U.S. patent situations where it might apply.

I also think that the surface owner should have input and consent relating to the final result of the reclamation plan, because he will be the person who will have to live with the result, not the coal company, or the State or Federal reclamation person, or the land planner, be he Federal or local.

Subsection (a) of section 410 should also clarify whether or not the intention is that consent shall accompany the permit application on a federally prepared form or whether a coal surface mining lease is sufficient to constitute the written consent.

I have seen leases where they just waive everything, there is nothing left except money, and the reason that I think the surface owner thing is important for the end result is because State and Federal agencies hire people from different parts of the country and although they are experienced personnel, there is something about living in an area that gives you an insight that you don't have. For instance if somebody from Kentucky is hired to go to Montana, he doesn't understand Montana for a while, and I know I wouldn't understand Kentucky and I wouldn't be competent to give the final say so. So, this is the reason that I think that is important.

There are some other comments, but this is the closing of my written statement.

[The prepared statement of Ms. Withers and material submitted follows:]

Senate Strip Mining Hearings
March 16, 1973
Testimony of Ellen Louise Pfister Withers

In times past the mineral hoard of Western Montana dominated the State and named it the "Treasure State"; in the last few years, the emphasis shifted to "Big Sky Country". Now it seems that with the spectre of large-scale coal development looming on the horizon of the big sky, we may become the "Black Sky Country". In 1971 the Montana Legislature enacted a surface mining reclamation act, which with time and experience in its administration proved to be unsatisfactory. The 1973 legislative session is wrestling with the problems of planning for coal development, including the regulation and taxation of what proposes to be a giant industry and probably the dominating force in Montana for years to come.

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93-213 O - 73 - pt. 2 -- 28

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The areas which I would criticize most severly are weaknesses in the areas of definitions, insufficiency of permit fee, cumbersome administrative organization, and lack of surface owner input into the reclamation proposals other than for "alternative" plans. I also think that a minimum time not being set forth for which a bond must be maintained is a serious weakness for two reasons, firstly, state personnel may not be sufficiently experienced to know if the vegetative cover on the "reclaimed" land will meet the act's requirements, and secondly, through pressure from the companies, the State may be prone to release a bond sooner than it should. When a coal company reclamation expert publicly admits in response to questioning that it may be anywhere from five (5) to twenty-five (25) years before "reclaimed" land can support livestock grazing, one can realize the pressure that may result for earlier than should be bond release.

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Accompanying are more comments and questions on S. 425.

Submitted by,

Ellen Louise Pfister
for Bull Mountain Landowners Association
Northern Plains Resource Council
P. O. Box 590
Billings, Montana 59103

Comments on S. 425
Submitted by
Ellen Louise Pfister Withers
P. O. Box 590
Billings, Montana
March 16, 1973
Senate Interior Committee

Page 5, lines 11-13
This sentence should not be weasel worded. It should be mandatory that hearings be held in the areas and states affected. It is a long ways from Montana to Washington and very expensive. The Secretary would get a lot more information upon which to base his regulations if he went to the people.

Page 5, Section 202.
As previously stated I do not like mixing land use and reclamation. This department would be much stronger concentrating only on reclamation and enforcement, and possibly should be in the Environmental Protection Agency rather than Interior.

Page 7, line 15
It appears that this law will become quite complex in its administration with not only statutory law and administrative regulations to thread one's way through, but also "Federal Programs" as well...thus giving an additional reason to confine the scope to reclamation and enforcement.

Page 8, lines 21 et seq
This is a worthy objective, but needs funding or else clarification of the funding intent later in the act.

Page 9, lines 8-10
Railroad extensions and spurs construed primarily for mining purposes should be included as affected areas within the purview of this act. In Montana Burlington Northern is building a 35 mile extension up Sarpy Creek for the purpose of servicing the Westmoreland Resources proposed mine. Parts of the line are crossing a creek bottom, which is an undeclared flood plain. In the Environmental impact statement prepared for the State of Montana, the proposed reclamation of the road bed upon the abandonment of the line is to remove the rails and ties and plant grass. The Creek bottom supports hay meadows. To properly reclaim the railroad bed, the fill should be removed from the creek bottom, and the bed returned to productive purpose. There is no law requiring railroad bed reclamation, but the route up Sarpy Creek is land affected by mining as surely as the mine itself.

Page 10, Section 204; Page 39, Section 216; Page 60, Section 409
It is possible that in some cases, some states may have stronger reclamation requirements than the Department of the Interior, in which case, it might be desirable to permit the state to administer its law on Federal land, as Section 204 apparently permits until modified by Section 216. In one case an Indian tribe is drawing up an environmental code to regulate the lands on its reservation. In so far as that code would affect surface mining, would a jurisdictional dispute arise between the tribal council and the Department of the Interior?

Page 16, lines 12-23
This is a good provision; however, I wonder if there should not be a place for review of the permit reclamation plan possibly within 2 1/2 years after issuance in order to update reclamation techniques. Five years can commit a large area of land to an outmoded reclamation procedure.

Page 26, line 3
The coal companies in Montana have at times made a policy of not recording the mineral lease under which they seek mining privileges. It seems to depend on the size of the lessor. A lease is a recordable instrument, but the practice is more honored in the breach than the observance; however, these mineral leases do adversely affect a third party, the surface owner, who has no knowledge other than hearsay.

Page 26, line 10
Who is the public, as in "publicly disclosed"? Where the applicant is seeking to surface mine only one mineral, and the other minerals which will be disturbed by his activity are owned by another, the mineral analysis should be available to the other mineral owner. Insofar as the chemical analysis of the overburden removed will affect soil properties and composition, that information should certainly be available to the surface owner as well, if he is to be considered as part of the adverse public.

Page 26, line 8
after the word "forming" insert ", saline, sodic, or alkaline.

Page 28, lines 7-22
These water protection requirements relate almost entirely to the East. For instance in (C) acid drainage is not the only underground water problem. The sealing should be done to prevent the mixing of undesirable aquifers with the waters from desirable aquifers--- such as sulphurous water for example. In the West other mineralized water may constitute an undesirable feature, such as sulphur, alkalai, salt or sodic. Further water left in impoundments with large surface areas could tend to become highly mineralized due to excessive evaporation in relation to the amount of water input.

Page 29, line 12
What is "sufficient notice" to get ready to have one's home, school or church affected by the use of explosives?

Page 32, line 10
This is a good provision, and should contribute toward a desire to walk the line.

Page 32, line 19
This, too, is a good provision, and one which title attorneys and abstracters will appreciate.

Page 38, line 3
Information for the Secretary's consideration---conservative estimates based on recorded instruments indicate that in the private sector at least 1,000,000 acres in the State of Montana have been committed to coal development.

Page 38, line 20 et seq
The Bureau of Land Management is currently conducting studies dealing with multiple use concepts in at least two coal bearing areas of Montana, which studies also deal with the use of mineral resources. These studies talk about reclamation laws in the most general fashion, and do not go into any specifics on reclamation, but pass the possibility or impossibility of reclamation on to legislative determination. It would appear that before the Secretary can conduct his review under this section that he will have to conduct a prior study to determine the physical and economic components of reclamation.

Page 41, Section 217.
It would appear that this study should be done before any regulations are promulgated or permits issued, or in some cases lands which may be determined to be vulnerable under this study may be committed irrevocably to being mined within the five year term of the permit. Would the Secretary have the power to deny permits in these questionable areas until the results of this study came in?

NOTE: In relation to page 42, line 7, the new Montana reclamation law permits a highwall slope of only 20°.

Page 45, Section 302.
I do not think that under this section the Secretary should be authorized to acquire mineral rights when he condemns the surface of abandoned mined land, unless he is directed at the time of disposal to convey a fee simple without exception to the purchaser. If the Secretary is to reserve the minerals, then he should not be allowed to acquire them in the first place. Federal minerals will cause enough misery in the West without passing it on to the East.

page 48, line 10 et seq
What is the definition of "abandoned and unreclaimed mined lands"? At what point in time is land considered "abandoned"? Probably definitions and specifics should be evolved here in order to avoid future wrangles.

page 54, lines 16-18
There should perhaps be a definition of a person eligble to apply for a permit, or perhaps a defintion of what constitutes "engaging in surface mining operations". Most of the surface coal mines in Montana have had the actual mineral removal subcontracted out to a construction or dirt moving company which employs members of the Union of Operating Engineers. It is possible that these subcontractors could make a bid to a coal company, get the bid, find out that the bid was too low, and that their profit margin was too close, forfiet the bond, blow the country and leave the State to reclaim. Peabody or Consol would still be sitting on their egg unscathed. The person, whether it be a corporation

or an individual, who receives the profit from the sale of the coal and the operations relating to its removal, should be the outfit that applies for the permit and be liable on the bond and other obligations. Corporate stockholders should not be receiving their profits at the expense of the public and some poor dirt mover who made a bad deal.

Page 56, National Advisory Committee
I find that this Advisory Committee is unbalanced in that it is not representative of the people who may be living on the mined land after mining, i. e., the surface owner.

Page 58, lines 4-11
If the States or the Federal government have developed relatively effective reclamation techniques , and these demonstration projects are to be carried on over privately owned lands, then these projects should not be undertaken unless the surface owner gives his consent, because experiments are not always successful and some people might not want to live around sewage sludge. If the Federal or State government want to experiment on their own lands that is fine, but lands that belong to someone else are another matter.

Any further comments on this bill are contained in the oral statement read at the hearing.

Submitted by,

Ellen Louise Pfister
on her own behalf

NORTHERN PLAINS RESOURCE COUNCIL

437 STAPLETON BUILDING
BILLINGS, MONTANA 59101
(406) 259-6114

STATE OF MONTANA
PRIVATE COAL LEASES-- TOTAL BY INDIVIDUALS(12 counties):

PAT McDONAUGH	35,890.70 ACRES
ROCKY MOUNTAIN MINERALS, INC.	1,288.32
ARKLAND	200.00
WESTMORELAND RESOURCES	20,312.66
ROSEBUD COAL SALES	.80.00
NORSWORTHY-- REGER	51,920.67
GULF OIL CO.	440.00
GULF MINERAL RESOURCES	3,738.86
CONSOL	41,355.31
WESTERN ENERGY CO.	74,543.17
HFC OIL CO.	67,242.93
KERR-- McGEE	3,229.50
THOMAS F. KEATING	3,982.20
JOHN S. WOLD	16,629.02
DAVID FITZGERALD	470.00
R. BOYD JONES	2,558.60
TRANSCONTINENTAL OIL CO.	30.00
SENTRY ROYALTY CO.	96,841.87
JOHN A. HOWELL	697.00
NORMAN JESSEN	1,920.00
PEABODY COAL CO.	1,769.25
H. T. JENKINS	2,880.00
MEADOWLARK FARMS	3,207.17
JOE H. HALVERSON	1,862.23
CHARLES B. SMITH	970.19
J&P CORPORATION	160.00
JAS. T. WAMSLEY	240.00
E. A. BOWEN, JR.	610.39

TOTAL RECORDED PRIVATE COAL LEASES STATE OF MONTANA:
(March 1, 1973) 435,070.04 ACRES

NORTHERN PLAINS RESOURCE COUNCIL
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STATE OF MONTANA-- PRIVATE COAL LEASES
TOTALS BY COUNTY:

BIG HORN COUNTY	78,447.64 ACRES
CUSTER COUNTY	40,744.07
DAWSON COUNTY	72,707.58
FALLON COUNTY	23,280.00
MUSSELSHELL COUNTY	17,262.44
POWDER RIVER COUNTY	136,842.38
PRAIRIE COUNTY	10,068.00
RICHLAND COUNTY	11,685.90
ROOSEVELT COUNTY	2,906.00
ROSEBUD COUNTY	14,174.60
TREASURE COUNTY	10,025.60
WIBAUX COUNTY	16,925.83
TOTAL RECORDED PRIVATE COAL LEASES: (March 1, 1973)	435,070.04 ACRES

(These acreage figures were compiled from leases, memorandums of leases, abstracts of leases, options to lease, abstracts of options to lease, and surface leases recorded in the county courthouses of the above counties. Of the 435,070.04 acres of coal mineral rights, 96,841.87 acres were leased by the Northern Pacific to Sentry Royalty Co. Given that the Burlington Northern, Inc. has not recorded all of the coal mineral rights it has leased, the total acreage figure for these twelve (12) counties is conservative.)

NORTHERN PLAINS RESOURCE COUNCIL
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MEMO:

TO: Members of the Northern Plains Resource Council

FROM: Office Staff

SUBJECT: Coal Mineral Right Leasing in Montana
(federal, state, Indian, and private)

Lessor	Acreage under lease	Acreage under prospecting permits	Acreage for which applications are pending
Bureau of Land Management(1)	36,232.27	37,544.00	419,684.00
State of Montana(2)	56,902.68	(does not apply)	7,219.41
Indian: Crow and Cheyenne(3)	77,158.98	459, 328.93	(unknown)
Private(4)	435,070.04	(does not apply)	(does not apply)
Total	605,363.97	496,872.93	426,903.41

As of March 1, 1973, at least 605,363.97 acres of coal mineral rights have been leased. If one adds to this figure the acreage currently under prospecting permits the total is 1,102,236.90 acres. And if one adds to this figure the acreage for which applications are pending the total is 1,529,140.31 acres, close to one-half of the strippable coal reserves in the state(5).

(1) Public Land Digest, U.S. Department of Interior, Bureau of Land Management, Montana State Office, page 9.

(2) letter to Frank Culver, Coal Task Force Co-ordinator, from Bob Duncan, Department of State Lands, September 28, 1972.

(3) letter to Mr. Fletcher Newby, Executive Director of the Montana Environmental Quality Council, from Maurice Babby, Billings Area Director, Bureau of Indian Affairs, January 10, 1972.

(4) These acreage figures were compiled by members of the office staff from leases, abstracts of leases, options to lease, abstracts of options to lease, and surface leases recorded in the county courthouses of the following counties: Big Horn, Custer, Dawson, Fallon, Musselshell, Powder River, Prairie, Richland, Roosevelt, Rosebud, Treasure, and Wibaux. Of the 435,070.04 acres of coal mineral rights, 96,841.87 acres were leased by the Northern Pacific to Sentry Royalty Co. Given that the Burlington Northern, Inc. has not recorded all of the coal mineral rights it has leased, the total acreage figure for these twelve (12) counties is conservative.

(5) Proceedings and Recommendations of the 1969 Governor's Conference on Mined-Land Reclamation and Montana Mining Law, compiled by S.L. Groff, State of Montana, Bureau of Mines and Geology, June 1970, page 36.

NORTHERN PLAINS RESOURCE COUNCIL
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STATE OF MONTANA -- PRIVATE COAL LEASES
COUNTY BREAKDOWN -- INDIVIDUAL LESSEE

BIG HORN COUNTY:	
Pat McDonough	3,840.00
Rocky Mountain Minerals, Inc.	1,288.32
Arkland	200.00
Westmoreland Resources	14,120.22
Rosebud Coal Sales Co.	80.00
Norsworthy & Reger	34,940.61
Gulf Oil Co.	440.00
Gulf Mineral Resources	3,738.86
Consolidation Coal Co.	19,799.62
CUSTER COUNTY	
Western Energy Co.	40,744.07
DAWSON COUNTY	
HFC Oil Co.	62,467.28
Kerr - McGee	3,229.50
Thomas F. Keating	3,982.20
John S. Wold	1,760.00
David Fitzgerald	470.00
R. Boyd Jones	638.60
Consolidation Coal Co.	160.00
FALLON COUNTY	
Western Energy Co.	22,640.00
Consolidation Coal Co.	640.00
MUSSELSHELL COUNTY	
Consolidation Coal Co.	17,262.44
POWDER RIVER COUNTY	
Norsworthy & Reger	7,919.81
Transcontinental Oil Co.	30.00
Pat McDonough	32,050.70
Sentry Royalty Co.	94,841.87
PRAIRIE COUNTY	
Western Energy Co.	10,068.00

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STATE OF MONTANA -- PRIVATE COAL LEASES
COUNTY BREAKDOWN -- INDIVIDUAL LESSEE

RICHLAND COUNTY	
R. Boyd Jones	1,920.00
John A. Howell	697.00
Consolidation Coal Co.	2,373.25
Norman Jessen	1,920.00
HFC Oil Co.	4,775.65
ROOSEVELT COUNTY	
John S. Wold	2,906.00
Peabody Coal Co.	1,769.25
Western Energy Co.	1,091.10
Norsworthy & Reger	8,434.25
H. T. Jenkins	2,880.00
TREASURE COUNTY	
Meadowlark Farm	3,207.17
Norsworthy & Reger	626.00
Westmoreland Resources	6,192.43
WIBAUX COUNTY	
John S. Wold	11,963.02
Joe H. Halverson	1,862.23
Charles B. Smith	970.19
J & P Corporation	160.00
Consolidation Coal Co.	1,120.00
Jos. T. Wamsley	240.00
E. P. Bowen, Jr.	610.39

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Senator METCALF. I appreciate, and I know the committee is going to appreciate the very specific and detailed comments that you have made. I have looked through them and I know they are going to be helpful.

We introduced you from Billings, Mont., but just for the record would you tell us about your ranch in Bull Mountains, and what the impact of surface mining is going to be up there and what it is going to be on you as an individual, in your agriculture and ranching activities?

Ms. WITHERS. Well, my mother and I are on a ranch on the south side of Dunn Mountain in the Bull Mountains. Dunn Mountain is the divide between the Yellowstone and Muscleshole Ranges and on our particular ranch, well, it is part of the overall Fort Union formation, but that Fort Union formation has good underground water in our place, our deepest well is 250 feet. We have got 12 windmills, seven electric wells, three gasoline wells; we have got four successful dams, we have got four unsuccessful dams; we have three developed springs and three potentially developable springs, and the mining would come in on the north end of our place, which is our summer ranch; it would come around the base of the mountain, which would create difficulties in using our good summer range. We have a spring-fed dam on top of the mountain and I have no idea what a severance around the base of a table land type area would do to the water up on top.

In one of the areas that was tested on the core drilling they had water at 16 feet and it was 116 feet down to the coal, and this particular place where they had the water, the water is so shallow, it is on the same draw below one of our best springs. So, it worries me.

There are other ranchers in the Bull Mountains that it would affect probably more severely economically than my mother and myself and the reason it would is because a lot of those ranches are fairly small and when a guy loses one section or two sections out of a small ranch, he is just about out of business or else his neighbor has to buy him out and he has to go somewhere else.

So, it could have a pretty severe economic effect on the agricultural end of it.

Senator METCALF. What you are telling us is your real concern about the impact on the subterranean water courses on which you rely even if it was possible to completely restore the contours, replant the areas, and make the surface just the same as it was before?

Ms. WITHERS. That is correct, Senator.

I would also say this, as far as I know and as far as the BLM knows, nobody knows exactly what the underground water situation in the Bull Mountains is. I don't believe that it is subterranean water courses or streams as they may have in the East.

Now, there are other parts of Montana, I think down in the Birney area where they do have known underground water courses, but in our particular area I just don't know, and this is one of the—BLM is doing this study on the Bull Mountains, on account of this mineral situation, and the water is one of their daily camp areas, so it is a real question, and if we don't have water, why, you may as well forget about using the grass, because the cattle will only walk so far to use it.

Senator METCALF. Thank you for coming back and giving us the benefit of your testimony and your experience as to what will happen to your ranch when unregulated or uncontrolled mining takes place.

Senator HASKELL. I just want to thank you so much and I would like to join your Senator from Montana in saying it is particularly helpful when people come as you did and make specific suggestions, and I just want to thank you very much for doing that.

Ms. WITHERS. Thank you.

Senator METCALF. Thank you for coming. This afternoon we are going to complete 4 days of what I feel have been comprehensive hearings on surface mining. This committee held hearings and reported legislation last year. I believe that the current hearings have been very helpful to all of us in drafting what I hope will be a much better bill, both for the mining interests that were concerned and for the environmentalists and the people who are concerned about destruction of the aesthetic and other resource values of land in the United States.

I want to express my own personal gratitude, because I am going to have to close my participation in the hearings in a few minutes, to Senator Haskell, to Senator Fannin, to Senator Hansen, and Senator McClure, all of whom have participated in many, many hours in these hearings asking searching questions.

I want to thank the people that came and testified and were so patient. I especially want to thank the staff who were also patient. The rest of us could leave and go to the floor, or go to our other meetings and vote in our other committees, but they had to sit and participate for hour after hour.

After last Congress it seemed apparent that only short additional hearings would be needed. But these longer hearings have been worthwhile. There is an urgency for the passage of some legislation despite some of the testimony to the contrary.

On the other hand, I feel that we need to have additional information that we have asked for during the course of these hearings and therefore I will repeat that the hearing record will be kept open for 10 days. I urge everyone to examine not only the record, but examine any of the proposals that are before us. We welcome anything that anybody can send in that will help us in the consideration of this far-reaching legislation.

At the conclusion of the 10 days, it is my hope that the chairman of the committee, Senator Jackson will give high priority to marking up this legislation. I am going to urge him to do so. I hope that we can have something over to the House of Representatives shortly, and that we can have definitive surface mining legislation so that the mining industry, the environmental and ecological people will know what they are going to be confronted with over the years.

So, my part of the hearings is over, but my participation in drafting this bill has just begun. I am sorry that I am going to have to leave for the rest of the afternoon and turn the balance of the witnesses over to my friends on my left.

I want to thank you all.

Senator Haskell.

Senator HASKELL. I have no comments, Mr. Chairman.

Senator METCALF. So, we will be in recess until 2:15 p.m. at which time the balance of the witnesses will be heard, and Senator Haskell, or Senator Fannin and Senator Hansen, will participate.

Thank you all.

[Whereupon, at 1:20 p.m., the committee was recessed, to reconvene at 2:15 p.m., the same day.]

AFTERNOON SESSION

[Present: Senators Fannin, Hansen, McClure, and Randolph.]

Senator FANNIN. The hearing will come to order. The first witness this afternoon will be Mr. James E. Hunt, executive director, Coal Operators & Associates, Inc.

Mr. Hunt, if you are not ready, I will call then, while you are getting ready, I will call on Mr. David Ozmina, Chairman, Steering Committee for surface mine research in West Virginia.

STATEMENT OF DAVID OZMINA, CHAIRMAN, STEERING COMMITTEE FOR SURFACE MINE RESEARCH IN WEST VIRGINIA

Senator FANNIN. We have your statement, sir. You may capsulize or handle it as you see fit.

Mr. OZMINA. Thank you, sir. Just some brief background information on myself. I would like to point out that I am representing the whole Steering Committee and that this draft was made up by our executive group.

Senator FANNIN. Thank you.

Mr. OZMINA. I am presently in the land stabilization business in West Virginia and surrounding States. My past positions have included: The assistant chief of reclamation for the West Virginia Department of National Resources; I worked as an officiary biologist; I was doctor on basic research concerning the surface mining in southern Illinois; I have a B.S. and M.S. degree from New Mexico, State University. New Mexico is where I was raised.

Senator FANNIN. Then you are a neighbor of mine.

Mr. OZMINA. Right. You are well aware that West Virginia has been the leader in coal production until the last 2 years. It is also well documented that this state has the largest reserve of low-sulfur coal east of the Mississippi River.

Much of the scarce natural resource can be recovered by surface mining methods. It is appropriate, therefore, that the state that is among the leaders in coal production should also lead in surface mining and reclamation research.

I am certain you appreciate the value of a diversified research program in developing methods to minimize effects from surface mining activities. It is unfortunate that more consideration has not been given to research results when drafting regulatory statutes.

We are not just talking about this committee, but in general, many times, these things have been brought up. And that goes pro and con, and the people in the middle very seldom have a chance to present their side.

The West Virginia Steering Committee for surface mine research accepts two basic assumptions regarding surface mining. First, sur-

face mining is more efficient than underground mining. It is more highly mechanized, and the rate of mineral recovery is much higher. The latter is very important when considering a nonrenewable natural resource that is essential to our national growth.

The second assumption is that any side-effects to other natural resources is temporary. It can be minimized, reduced, and then eliminated in time by careful planning, good mining methods, and effective restoration practices.

Within the next few minutes, I shall attempt to briefly describe West Virginia's surface mining and reclamation research program. I will review the history of the organization, describe some of its activities, and comment on future plans.

In 1967, representatives from the West Virginia Department of Natural Resources, and the West Virginia Surface Mining and Reclamation Association attended a mined land reclamation symposium in Owensboro, Ky.

They were impressed by the accomplishments of the Forest Service research, and submitted to the Director of the Northeastern Forest Experiment Station a proposal for a cooperative research effort. State and industry funds would be contributed to support a Forest Service research project in West Virginia.

A tripartite agreement was signed in 1968, and the Forest Service assigned a senior scientist and a technician to their laboratory at Princeton, W. Va.

Four representatives were selected by each of the signatories of the tripartite agreement. In addition, the following organizations each selected one representative: Soil Conservation Service, the Soil Conservation Districts of West Virginia, West Virginia University, and the National Coal Association.

This committee selected research problems, and assigned each a priority. The Forest Service used these recommendations in developing a diversified research program.

Once the steering committee was organized and functioning, the meetings were opened to the public. People interested in surface mining were encouraged to attend and participate. These semiannual meetings became quite popular, and we had no problem in generating interesting and informative discussions.

Last year, the Agricultural Research Service accepted our invitation to serve on this committee. They had initiated a very interesting program concerned with the revegetation of extremely acid spoils.

We individually or as a group endorse research proposals. This may assist a scientist in obtaining funds or cooperation. For many field studies a scientist needs land equipment and materials to establish a project. We have been able to recommend surface mine operators who would be willing to cooperate. Arrangements have also been made for researchers to enter several properties for the purpose of data or sample collection. All of these activities simplify the research process.

Last year, the committee reexamined its activities and functions. We prepared the following objectives to guide us as the program becomes more diversified, and new research projects are initiated.

To develop methods for interpreting and demonstrating the practical application of surface mining and reclamation research.

To encourage communication between research scientists, the regulatory agencies, and the surface mining industry so that research concerns relevant problems.

To offer advice on proposed research and demonstrations, and to cooperate with the research scientist in obtaining assistance necessary to initiate specific projects.

To foster and advance an understanding of surface mining and reclamation by the general public.

Our major accomplishment has been to stimulate an interest in surface mining research. Before the steering committee, the major research efforts were small projects located at West Virginia University, and field evaluations of plant materials by the Soil Conservation Service.

In a 4-year period, this has developed into a half-million dollar effort involving six Federal agencies, two colleges and universities, two State agencies, and several coal companies. The subjects under investigation have expanded from revegetation to comprehensive studies concerning geology, hydrology, methodology, soil science, engineering, and economics. Long- and short-term studies are included, and several require a multidisciplinary approach to a problem.

The steering committee selected as one of its priority projects a detailed analysis of the overburden above the Upper Freeport coal seam in northern West Virginia. The coal body has extensive reserves, but the spoils often are extremely acid.

Through the committee's efforts, Dr. Richard M. Smith, an agronomist at West Virginia University, became interested in the problem, and a grant was obtained from the Environmental Protection Agency. With other cooperative assistance, Dr. Smith has been able to make substantial progress toward solving this difficult problem. His accomplishments will have application in Ohio and Pennsylvania. Furthermore, his techniques for overburden analysis may have national significance.

The committee initiated a large-scale field demonstration this year. We will establish several demonstration sites to show how to plan and develop an area disturbed by surface mining as attractive habitat for wildlife.

Professional wildlife biologists will contribute their expertise to planning these sites. Several mine operators will supply the labor and materials to complete the plans. We want to demonstrate to the public the tremendous potential surface mined areas have as wildlife habitat when reclamation treatments are planned for this purpose.

Steep slope mining methods have been developed and by proper selection of equipment, seed, fertilizer, mulch, and other materials successful revegetation has been accomplished on these contour mined areas in steep mountainous terrain.

Research experience has shown that contour backfilling is often creating more problems than it is solving. This is due to the difficulty of accomplishing this, that is, the mining itself, in some areas, difficulty in the revegetation effort, excessive siltation leaving the site during and after regarding and the desire of many landowners to have the flat bench left for grazing, farming, housing, wildlife habitat, commercial and industrial sites, et cetera.

Our plans for the future include continued expansion of the research program. We are also sponsoring the Steering Committee for Surface Mine Research in Appalachia. This group will be structured after the West Virginia committee. It will bring together industry, regulatory agencies, colleges and universities, and Federal research agencies. Eight States have been invited to participate, and the response to our invitation has been very encouraging. We will hold the final organizational meeting in May.

In summary, I want to emphasize that sound research programs are not developed by a handful of scientists working alone. The participation and cooperation of many groups is needed to keep the program relevant to today's problems.

This committee has created the most favorable environment for a dynamic research program by bringing together the coal industry, State agencies, universities, and Federal agencies. It is our hope that you will recognize that this type of research program is the most promising way to minimize effects on other natural resources by surface mining.

We encourage you to use available research results as a basis for drafting new legislation. On behalf of the West Virginia Steering Committee I would like to invite you to come and see for yourself what is being accomplished before you make recommendations.

In closing I would like to remind you that only through proper research can we have research properly applied.

[The prepared statement of Mr. Ozima follows:]

STEERING COMMITTEE FOR SURFACE MINE RESEARCH IN WEST VIRGINIA

PRESENTED BY: DAVID J. OZMINA

STATEMENT TO BE PRESENTED TO THE SENATE COMMITTEE
ON INTERIOR AND INSULAR AFFAIRS,
FRIDAY, MARCH 16, 1973

You are well aware that West Virginia has been the leader in coal production until the last two years. It is also well documented that this state has the largest reserve of low-sulfur coal east of the Mississippi River. Much of the scarce natural resource can be recovered by surface mining methods. It is appropriate, therefore, that the state that is among the leaders in coal production should also lead in surface mining and reclamation research. I am certain you appreciate the value of a diversified research program in developing methods to minimize effects from surface mining activities. It is unfortunate that more consideration has not been given to research results when drafting regulatory statutes.

The West Virginia Steering Committee for Surface Mine Research accepts two basic assumptions regarding surface mining. First, surface mining is more efficient than underground mining. It is more highly mechanized, and the rate of mineral recovery is much higher. The latter is very important when considering a non-renewable natural resource that is essential to our national growth. The second assumption is that any side-effects to other natural resources is temporary. It can be minimized, reduced and

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Once the Steering Committee was organized and functioning, the meetings were opened to the public. People interested in surface mining were encouraged to attend and participate. These semi-annual meetings became quite popular, and we had no problem in generating interesting and informative discussions. Last year, the Agricultural Research Service accepted our invitation to serve on this committee. They had initiated a very interesting program concerned with the revegetation of extremely acid spoils.

We individually or as a group endorse research proposals. This may assist a scientist in obtaining funds or cooperation. For many field studies a scientist needs land equipment and materials to establish a project. We have been able to recommend surface mine operators who would be willing to cooperate. Arrangements have also been made for researchers to enter several properties for the purpose of data or sample collection. All of these activities simplify the research process.

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Our major accomplishment has been to stimulate an interest in surface mining research. Before the Steering Committee, the major research efforts were small projects located at West Virginia University, and field evaluations of plant materials by the Soil Conservation Service. In a 4-year period, this has developed into a half-million dollar effort involving six federal agencies, two colleges and universities, two state agencies, and several coal companies. The subjects under investigation have expanded from revegetation to comprehensive studies concerning geology, hydrology, methodology, soil science, engineering, and economics. Long and short-term studies are included, and several require a multidisciplinary approach to a problem.

The Steering Committee selected as one of its priority projects a detailed analysis of the overburden above the Upper Freeport coal seam in northern West Virginia. The coal body has extensive reserves, but the spoils often are extremely acid. Through the committee's efforts, Dr. Richard M. Smith, an agronomist at West Virginia University, became interested in the problem, and a grant was obtained from the Environmental Protection Agency. With other cooperative assistance, Dr. Smith has been able to make substantial progess toward solving this diffi-

cult problem. His accomplishments will have application in Ohio and Pennsylvania. Furthermore, his techniques for overburden analysis may have national significance.

The committee initiated a large-scale field demonstration this year. We will establish several demonstration sites to show how to plan and develop an area disturbed by surface mining as attractive habitat for wildlife. Professional wildlife biologists will contribute their expertise to planning these sites. Surface mine operators will supply the labor and materials to complete the plans. We want to demonstrate to the public the tremendous potential surface mined areas have as wildlife habitat when reclamation treatments are planned for this purpose.

Steep slope mining methods have been developed and by proper selection of equipment, seed, fertilizer, mulch and other materials successful revegetation has been accomplished on these contour mined areas in steep mountanous terrain.

Research experience has shown that contour backfilling is often creating more problems than it is solving. This is due to the difficulty of accomplishing this in some areas, difficulty in the revegetation effort, excessive siltation leaving the site during and after regrading and the desire of many landowners to have the flat bench left for grazing, farming, housing, wildlife habitat, commercial and industrial sites, etc.

Our plans for the future include continued expansion of the research program. We are also sponsoring the Steering Committee

for Surface Mine Research in Appalachia. This group will be structured after the West Virginia committee. It will bring together industry, regulatory agencies, colleges and universities, and federal research agencies. Eight states have been invited to participate, and the response to our invitation has been very encouraging. We will hold the organizational meeting in May.

In summary, I want to emphasize that sound research programs are not developed by a handful of scientists working alone. The participation and cooperation of many groups is needed to keep the program relevant to today's problems. This committee has created the most favorable environment for a dynamic research program by bringing together the coal industry, state agencies, universities, and federal agencies. It is our hope that you will recognize that this type of research program is the most promising way to minimize effects on other natural resources by surface mining. We encourage you to use available research results as a basis for drafting new legislation. On behalf of the West Virginia Steering Committee I would like to invite you to come and see for yourself what is being accomplished before you make recommendations.

In closing I would like to remind you that only through proper research can we have research properly applied.

Background Information on Speaker:

David J. Ozmina

Chairman (1972-73), Steering Committee for Surface Mine Research in West Virginia

President, D & D Reclamation, Inc.
Beckley, West Virginia

Former Positions:

Assistant Chief, Reclamation Division W.Va. Department of Natural Resources.

Fisheries Biologist, Wildlife Division W.Va. Department of Natural Resources.

Assistant to the Director, Cooperative Wildlife Research Lab.
Southern Illinois University (Initiated basic research on problems associated with surface mining in Southern Illinois)

Research Fisheries Biologist
Agriculture Experiment station New Mexico State University and New Mexico Department of Game & Fish.

B.S. & M.S. New Mexico State University
Major-Fisheries Science
Minors-Wildlife Mgt. & Statistics.

Member of:

The Wildlife Society
American Fisheries Society
Soil Conservation Society of America
West Virginia Young Farmers Association
(State Secretary-1973-74)

Certified Fisheries Biologist
Certified Fisheries Scientist (No.565)

Senator FANNIN. Thank you, Mr. Ozmina, for a very objective and informative statement. Your testimony will be very valuable to us. You have brought us some information of which I was personally unaware.

The extent of your research and cooperation involves eight States in the cooperative research program?

Mr. OZMINA. Right. Our steering committee, over the past year, has had an interest from surrounding States on our program. And, then, when we found out that some of the States were not aware of what we were doing—and they found out we had been working on problems—but you know they were working on them, too, but we had started sooner.

So, we felt, and we told the State people, the Federal people, operators in the Appalachian region, to see if they would be interested in this type of program. The response was just overwhelming, we just had a crowd.

Senator FANNIN. When did your organization start operating?

Mr. OZMINA. The West Virginia Steering Committee started in 1967–68. It more or less got underway as the results of the surface mining law in West Virginia that passed in 1967. Everybody knew, you know, we just had to find answers to handle the difficulties that we were involved with, and all peoples concerned, decided that this is the way to go, and it has just been a phenomenally successfully endeavor.

Senator FANNIN. You referred to working with the University of West Virginia, as I understand. Do they have a school of mining?

Mr. OZMINA. No.

Mr. FANNIN. I understand that they have that?

Mr. OZMINA. There is one there and one at West Virginia Tech.

Senator FANNIN. No doubt you work with the Bureau of Mines?

Mr. OZMINA. Right. The Bureau of Mines, Mr. Capp, from the Bureau of Mines has done quite an extensive amount of work on fly ash. It is in fly ash, an aid in reclamation, especially of old areas, but now they are extending that to new areas. They have worked out over the years so many problems associated with fly ash. Some you can use, and some you can't, depending on the coal that is burned, and depending on the problems.

Senator FANNIN. I was wondering if you have any idea of how much land has been reclaimed under your program?

Mr. OZMINA. Well, under the State guidance, I believe, last year, and I believe Mr. Wilkinson, when he gets up, has detailed figures on that. But it was somewhere in the vicinity of 27,000 acres.

Senator FANNIN. Mr. Wilkinson is with you?

Mr. OZMINA. No, he is with the Surface Mine Association of West Virginia.

Senator FANNIN. You say Mr. Wilkinson or Mr. Wilson?

Mr. OZMINA. I believe he has those figures.

Senator FANNIN. Is that Mr. Jim Wilkinson, president of the West Virginia Surface Mine Reclamation Association? We will get that information from him, then.

Mr. OZMINA. I have one list here. I sent one to Senator Jackson. I will be glad to leave this one. The research projects that we have underway, of course, they are never really finished, but a lot of them we have got years of results on it.

Senator FANNIN. Were you going to furnish that information for the benefit of the committee?

Mr. OZMINA. Right, I would appreciate it.

Senator FANNIN. Thank you. Without objection, it will be included in the record.

Senator HANSEN. Mr. Ozmina, on behalf of Senator Cook, I would like to ask you, can you tell how your program ties in to the program at Berea, Ky., which, as you probably know, is supported by the Department of Agriculture?

Mr. OZMINA. Right. Mr. Bill Floss, works for the research station here as the technician that will send over to Princeton to head up the whole operation. And there was his background and, of course, the Berea Station in particular, where we got this idea.

They did not feel under the circumstances they could set up a station like that in West Virginia. So, what we do, the way it is set up, money is put in each year by the Reclamation Division, Department of Natural Resources, by the West Virginia Surface Mine and Reclamation Association, and then by the Forest Service itself, in that they pay your salary, and the travel. Then we use the Berea Station or he uses the Berea Station just like it was there.

They all are set up for water analysis, and the basic soil analysis. So, these people, a lot of the hydrology work and so on that has been done and is being done right now in West Virginia was designed through our group, by the backup people in the station there. So, we just work, we use them all, we don't close the doors to anybody.

Senator HANSEN. Thank you very much.

Senator FANNIN. Thank you, Mr. Ozmina. We will retain that information. You have quite a project underway; we will be given the details.

[The information requested was not received in time for inclusion in the record.]

Mr. OZMINA. Any further information we would be glad to furnish you and, again, I would like, if there would be any way to have some of you gentleman come out. I would be glad to show you what we are doing.

Senator FANNIN. Thank you, we appreciate the invitation.

Senator HANSEN. I just might observe, Mr. Chairman, if I could interrupt momentarily, that I know of Senator Cook's intense interest in this program. It may very well be that when he has an opportunity to read the transcript, he would like to ask further questions. If he does, I would hope that the gentleman might keep this hearing record open for such time as is necessary in order to permit the inclusion of further questions from him to you, along with your responses.

Mr. OZMINA. Anytime at all, we would be—we will get the information for him.

Senator FANNIN. Our subcommittee chairman has stated the record will be kept open for 10 days. Thank you very much.

Mr. OZMINA. Thank you, sir.

Senator FANNIN. Mr. Hart, I understand you are ready now.

Mr. HART. I hope so, Senator.

Senator FANNIN. Are you going to comment about the movie?

Mr. HART. Senator, I have a few remarks to introduce yet, sir.

Senator FANNIN. Fine, proceed.

STATEMENT OF KEN HART, COAL OPERATORS & ASSOCIATES, INC., PIKEVILLE, PIKE COUNTY, KY.

Mr. HART. I want to apologize for the delay.

I am Ken Hart, and I represent Coal Operators & Associates, Inc., a trade association of small coal operators based in Pikeville, Pike County, Ky.

Small coal operators are the independents who own and operate their own mines, known as brother-in-law or family mines, and work as few as 3 or up to 10 or 15 men in a mine.

There are probably more of these operators in Pike County than any other county in the United States. While their contribution, in terms of total tonnage, to the Nation's energy needs has been measured to be relatively insignificant, their contribution, in terms of dollars and cents, to the economic independence of their families certainly is not.

Until fairly recently the men who worked in the small coal mines of Pike County comprised about half the total employed work force of the county, and this is typical of many eastern Kentucky, western West Virginia, and Tennessee counties. The enactment of certain Federal and State legislative programs has thinned this work force considerably in the past 2 years. Welfare rolls, as a result, have grown.

We realize how seriously this committee has under study the effects of slope reduction on the availability of coal reserves and the economy of this country. Any reduction whatsoever in the degree of slope would cripple the surface mining industry in eastern Kentucky, and cripple its people, too.

The film you have so kindly permitted us to show here today was made by our association to show what the people of Pike County are really like, as compared to what people from outside the mountains thinks they are like.

This was shown to Senator Cook about a month ago, and he suggested that we show it at this hearing. This is a film about people, not coal mining, and this is the first public showing of "Did You Walk Out, Swing Out or Just How?"

I hope we can get it in focus.

[Film was shown.]

Mr. HART. Mr. Chairman, that completes my testimony.

Senator FANNIN. Thank you very much, Mr. Hart. That is a very impressive film. I do consider what you have shown us as typical of other counties in Kentucky.

Mr. HART. I think it is typical of Harlan, Hazard, Martin, Whitesburg, Paintsville, and Crescentburg.

Senator FANNIN. How far is Pike County from Elliott County or Boyd County?

Mr. HART. It is about 100 miles from Boyd, and 50 from Elliott.

Senator FANNIN. Fifty?

Mr. HART. Yes, sir.

Senator FANNIN. I was born in Boyd County, and my mother in Elliott County. So, I have been back there many times, and I am quite familiar with the territory involved. I am not too familiar with Pike County.

We hear so much about water pollution, is that a problem in the areas you have shown?

Mr. HART. Some, yes, sir.

Senator FANNIN. A serious problem?

Mr. HART. Yes, sir.

Senator FANNIN. Is an effort being made to counteract that problem?

Mr. HART. We would hope that the Federal Government would get some more money into the counties to help build more water systems, more sewage systems. I think sewage is a bigger problem than the polluted water. The sewage disposal.

Senator FANNIN. The people there are quite dependent on coal, insofar as the film?

Mr. HART. Almost entirely, I think, Senator.

Senator FANNIN. They want to stay there, seem to be happy there, and going forward. Then you feel that we should make every effort to overcome some of the problems which we recognize do exist in those areas?

Mr. HART. The only point I really wanted to make here today was that any reduction in the degree of slopes in the mountains in eastern Kentucky, and other parts of Appalachia, would just about cripple surface mining, because there are no slopes less than what they are mining on now, or very few.

Senator FANNIN. I noticed that in some of the pictures in the underground mining involved——

Mr. HART. This picture was not made for the sharing, sir.

Senator FANNIN. I see. So you showed us both underground and surface.

Mr. HART. The picture was made as a public relations tool, but we never got it finished and never showed it before the severance tax was passed in Kentucky.

Senator FANNIN. Do you have any idea of the unemployment rate in the counties that you have shown?

Mr. HART. No, I don't, but I have a copy of the Kentucky Coal Association's testimony as submitted by Mr. Martin, and he has figures in there.

Senator FANNIN. All right.

Mr. HART. On the unemployment work force.

Senator FANNIN. Thank you, Mr. Hart. Senator Hansen.

Senator HANSEN. I was very interested in your brief introduction and with the picture itself. I come from a little town in western Wyoming, and I think that it is probably accurate to say that these are rather large numbers of people living in metropolitan areas who are inclined to look with some degree of condescension upon those who come from small rural areas. I believe your picture goes a long way in discrediting that rather widely held impression. Stanley Resor, a very dear friend of mine, is retired from public service. He was president of J. Walter Thompson, one of the leading advertising companies in the world. He told me that a study undertaken here about 35 years ago impressed him with the leadership qualities that seemed to be developed in rural areas in proportion to the percentage of people found in those areas.

He had that point very well documented with research he had done, which was in collaboration with other researchers. That reflects my feeling that maybe the necessity to assume, to a greater degree than may be found in cities, the opportunity for individual expression of a lifestyle that may suit their own choosing, contributes to that sort of independence that provides a very necessity infusion of spirit in America today.

I think you and the people in the great State of Kentucky fully justify the respect in which you are held by the rest of us. Thank you, sir.

Mr. HART. Thank you.

Senator FANNIN. Thank you very much, sir. The next witness will be Mr. Russell Chadwick, president of the Northwest Mining Association.

Mr. Chadwick, we welcome you here today. Your complete statement will be made a part of the record. My understanding is you are going to comment on both S. 425 and S. 923. You may proceed at your desire.

STATEMENT OF RUSSELL CHADWICK, PRESIDENT, NORTHWEST MINING ASSOCIATION

Mr. CHADWICK. Thank you, Senator.

Mr. Chairman, Mr. Hansen, I understand that time is short, and I will try to eliminate some of the boilerplate from my prepared statement, if it will all be in the record.

I am Russell Chadwick of Spokane, Wash. I am a consulting geologist of 30 years' standing, an attorney and president of the Northwest Mining Association, which I represent here. We are a 79-year-old voluntary association of some 600 individuals interested in mining, most of them from our region, but some of them from throughout the country. The association is sustained largely by our dues and the income from our activities.

Over the past few years we have spent hundreds of man-days in analyzing and commenting on reclamation bills, both State and Federal. We have drafted two complete substitute reclamation bills covering hard-rock minerals and all types of mining, one a State bill, the other a Federal, and are consequently reasonably familiar with the type of legislation under consideration here.

We know that it is possible to write a good reclamation bill which will satisfy rational men that the mining operator is doing everything necessary to protect public health and safety, and everything feasible and sensible to minimize the visual impact of his operations.

We also know that in our economic and political system private industry has the responsibility of finding and making available the basic mineral raw materials and fuels upon which our entire civilization rests, and that the Government, historically, has wisely avoided even the appearance of attempting to control these essential commodities.

Having that responsibility and the knowledge of what it really takes to replace inadequate reserves ton-for-ton as they are used, we can't be too emphatic in saying that legislation, whether labeled reclamation,

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land-use, environmental protection, or whatever, which inhibits industry from exploring for and developing new domestic mineral reserves, is not in the national interest.

The fuel crisis very predictably will be followed by a metal crisis—50 percent of all manufacturing is metal manufacturing—a construction materials crisis, a fertilizer crisis, et cetera. And one can also confidently predict that, if such an economic doomsday is brought about, the minerals will be supplied, and whoever does the mining will dig just as many holes as industry might have only at that point they won't be as fussy about the esthetics.

I think it is not widely enough understood by the public and people in general that we have at any given time an adequate reserve of most of the commodities, metal commodities, that we are dealing with. And that we have a rule in our industry that we try to replace reserves as they are used, ton-for-ton, and the rest of the reserves are replaced ton-for-ton.

While you can see the end of the supply of a lot of our critical minerals, and I think right now one has cause to be concerned with, not only the energy crisis, but possible impending crises in some of the very important metals, copper, lead, zinc, and many others.

S. 425 is entirely unacceptable to our association since it would not only inhibit the mineral industry from further domestic exploration and development but would shut down existing operations. The reasons for this opinion are many, the most important of which are the following.

One, we believe it is unconstitutional on three grounds, namely: First, minerals and mining rights are property and the authority the bill gives the Secretary or a State agency to refuse by fiat the right to mine private land appears to be a deprivation of property forbidden by amendments V and XIV.

Second, the bill would deny the right to mine because of a failure to reclaim land already mined and this appears to be an ex post facto law forbidden under article 1, sections 9 and 10.

Third, although the shutdown of a mine or the denial of the right to mine on private property would certainly seem to be a "taking of private property for public use" forbidden under amendment V "without just compensation," the bill does not provide for compensation.

Two, the entire thrust of the bill is, it seems to us, at land-use control for the purpose of preventing mining wherever the Secretary or State agency thinks it is "unsuitable," or an "area of critical environmental concern," or "incompatible with * * * governmental objectives," or cannot be "physically or economically" reclaimed. Land-use or zoning matters have always warranted, in our judicial system, elaborate evaluation procedures and legal safeguards on a local case-by-case basis. S. 425 provides no procedure for evaluating either the available subsurface values, or the benefits or detriments that would flow from a decision to forbid mining.

Three, the bill, S. 425, is extraordinarily biased against mining, and for preservation, from the findings on down. Mining can be forbidden or stopped if one can't, for example, "return all surface areas to a condition at least fully capable of supporting the uses which they were capable of supporting prior to mining"; this despite the fact that the

material to be mined may be extremely scarce and valuable while the prior use was poor rattlesnake pasture.

Further, on bias, there are many provisions on enforcement, including criminal penalties; those objecting to mining are given rights at every stage; expensive performance bonds are required of the miner; surface owners' rights under the law are enhanced; even the general public is favored with liability insurance.

By contrast, there is no provision for the miner to appeal and get a speedy decision; a major operation can be shut down immediately, regardless of cost, by a mine inspector for any real or imagined violation of any requirement, and regardless of whether public health and safety is involved or simply the inspector's esthetic sensibilities.

Four, the bill sets forth in five lines of section 215(b):

First, an unlimited new "wilderness" law, giving the Secretary arbitrary power over all public lands, and without any provision for studies of suitability or subsurface values.

Second, a new mining law wherein the Secretary is given blanket authority to "condition mineral entries."

The above are some of our general objections to the provisions of S. 425. More specifically, we recommend striking everything following "Title 1—Statement of Findings and Policy" and substituting a bill having provisions aimed squarely and solely at mined-land reclamation, which may be roughly outlined as follows:

One, require a "best-efforts" approach to the end result of beneficial use and acceptable appearance.

Two, require an approved preestablished reclamation plan, covering the life of the mine—such as they have in Montana.

Three, set minimum standards for the efforts to be made, with demanding but practical requirements, and allowances for the realities, such as exploration procedures, subsidence, open pits and quarries, strip—panel—mining, waste dumps, tailings, et cetera.

Four, set maximum obligations for each type of operation, considering feasibility, available technology, a rational relationship between benefits and costs, et cetera. Set specific dollar limits in terms of actual surface values in the area.

Five, provide for judgment of the efforts and results in terms of the approved plan.

Laws of this sort are in effect in a number of States in our Northwest region and from all reports are working well. We believe S. 923 could become an acceptable bill with a few changes as follows:

One, it is not clear whether in the case of open-pit mining the spoil from new-mined areas must be put back in the pit under 201(b)(4). In many open pits this would amount to an intolerable cost burden on the ore. In other pit operations the ultimate cost per acre of the restored surface would be astronomic relative to the value and the effort would be a ridiculous waste of resources.

Two, in determining areas "unsuitable for mining," (*a*) there are detriments in the waste of subsurface resources; (*b*) Property "taken" because of "unsuitability" should be compensated for. 201(a)(8); (3). We believe upper limits of the operators' obligations to the State should be made definite and certain, for example:

Standards not beyond existing water and air quality standards.

Standards not above those obtainable from adjoining unmined land.

Reclamation need not be to a better condition or higher use than existed prior to mining. In our opinon if the legslation aims to committing park lands, which are nonexistent, then there should be some arrangement for tax payment.

Standards should not be above those obtainable with good, then-current practice.

The operator need not make more than two bona fide attempts to revegetate. This gets to be quite a problem in some of the areas of the West where your obligation might go on indefinitely after you had ceased mining—in the case of arid land.

In summary, we understand there are some local areas where land reclamation is an important issue to local people. In the West, generally, there are not many surface mines, and the areas affected are not in great demand for other uses.

We feel that general reclamation legislation is desirable and perfectly feasible without shutting down mining. We believe that any legislation must clearly express the rights and obligations of the operator, so that exploration and development investment by free enterprise can continue with the assurance that land tenure will be secure.

Exploration and development must replace ton-for-ton everything mined or the end of our supplies is very predictable. If the legislation calls for a reclamation plan which extends for the life of the mine, the responsibility is on the individual, where it should be in our system.

I want to thank you for the opportunity to appear.

[The prepared statement of Mr. Chadwick follows:]

S T A T E M E N T

OF

RUSSELL H. W. CHADWICK

PRESIDENT, NORTHWEST MINING ASSOCIATION

SPOKANE, WASHINGTON

TO

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

UNITED STATES SENATE

AT

WASHINGTON, D. C.

MARCH 16, 1973

RE: S. 425; Surface Mining Reclamation Act of 1973

S. 923; Mined Area Protection Act of 1973

I am Russell Chadwick of Spokane, Washington. I'm a consulting geologist of thirty years standing, an attorney and President of the Northwest Mining Association, which I represent here. We are a 79 year old voluntary association of some 600 individuals interested in mining. The Association is sustained largely by our dues and the income from our activities.

Over the past few years we have spent hundreds of man-days in analyzing and commenting on reclamation bills, both state and federal. We have drafted two complete substitute reclamation bills covering hard-rock minerals and all types of mining, one a state bill, the

other a federal, and are consequently reasonably familiar with the type of legislation under consideration here. We know that it is possible to write a good reclamation bill which will satisfy rational men that the mining operator is doing everything necessary to protect public health and safety and everything feasible and sensible to minimize the visual impact of his operations.

We also know that in our economic and political system private industry has the responsibility of finding and making available the basic mineral raw materials and fuels upon which our entire civilization rests, and that the government, historically, has wisely avoided even the appearance of attempting to control these essential commodities. Having that responsibility and the knowledge of what it really takes to replace inadequate reserves ton-for-ton as they're used, we can't be too emphatic in saying that legislation, whether labeled Reclamation, Land-Use, Environmental Protection, or whatever, which inhibits industry from exploring for and developing new domestic mineral reserves is not in the national interest. The fuel crisis very predictably will be followed by a metal crisis (50% of all manufacturing is metal manufacturing), a construction materials crisis, a fertilizer crisis, etc. And one can also confidently predict that if such an economic doomsday is brought about, the minerals will be supplied, and whoever does the mining will dig just as many holes as industry might have only at that point they won't be as fussy about the aesthetics.

S. 425 is entirely unacceptable to our Association since it would not only inhibit the mineral industry from further domestic exploration and development but would shut down existing operations.

The reasons for this opinion are many, the most important of which are the following:

1. We believe it is unconstitutional on three grounds, namely:

(a) minerals and mining rights are property and the authority the bill gives the Secretary or a state agency to refuse by fiat the right to mine private land appears to be a deprivation of property forbidden by Amendments V and XIV.

(b) The bill would deny the right to mine because of a failure to reclaim land already mined and this appears to be an ex-post-facto law forbidden under Article I, Sections 9 and 10.

(c) Although the shut-down of a mine or the denial of the right to mine on private property would certainly seem to be a "taking of private property for public use" forbidden under Amendment V "without just compensation", the bill does not provide for compensation.

2. The entire thrust of the bill is at land-use control for the purpose of preventing mining wherever the Secretary or state agency thinks it is "unsuitable", or an "area of critical environmental concern", or "incompatible with - - - governmental objectives", or cannot be "physically or economically" reclaimed. Land-use or zoning matters have always warranted, in our judicial system, elaborate evaluation procedures and legal safeguards on a local case-by-case basis. S. 425 provides no procedure for evaluating either the available subsurface values, or the benefits or detriments that would flow from a decision to forbid mining.

3. The bill (S.425) is extrordinarily biased against mining, and for preservation, from the findings on down. Mining can be forbidden or stopped if one can't, for example, "return all surface

areas to a condition at least fully capable of supporting the uses which they were capable of supporting prior to mining"; this despite the fact that the material to be mined may be extremely scarce and valuable while the prior use was poor rattlesnake pasture.

Further on bias, there are many provisions on enforcement, including criminal penalties; those objecting to mining are given rights at every stage; expensive performance bonds are required of the miner; surface owners' rights under the law are enhanced; even the general public is favored with liability insurance. By contrast, there is no provision for the miner to appeal and get a speedy decision; a major operation can be shut down immediately, regardless of cost, by a mine inspector for any real or imagined violation of any requirement, and regardless of whether public health and safety is involved or simply the inspector's aesthetic sensibilities.

4. The bill sets forth in five lines of Section 215 (b)
(a) an unlimited new "wilderness" law, giving the Secretary arbitrary power over all public lands, and without any provision for studies of suitability or sub-surface values.
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1. Require a "best-efforts" approach to the end result of beneficial use and acceptable appearance.

2. Require an approved pre-established reclamation plan, covering the life of the mine.

3. Set minimum standards for the efforts to be made, with demanding-but-practical requirements, and allowances for the realities (exploration procedures, subsidence, open pits and quarries, strip (panel) mining, waste dumps, tailings, etc.).

4. Set maximum obligations for each type of operation, considering feasibility, available technology, a rational relationship between benefits and costs, etc.; set specific dollar limits in terms of actual surface values in the area.

5. Provide for judgement of the efforts and results in terms of the approved plan.

Laws of this sort are in effect in a number of states and from all reports are working well. We believe S. 923 could become an acceptable bill with a few changes as follows:

1. It is not clear whether in the case of open-pit mining the spoil from new-mined areas must be put back in the pit under 201 (b) (4). In many open pits this would amount to an intolerable cost burden on the ore; in other pit operations the ultimate cost per acre of the restored surface would be astronomic relative to the value and the effort would be a ridiculous waste of resources.

2. In determining areas "unsuitable for mining", (a) there are detriments in the waste of sub-surface resources; (b) Property "taken" because of "unsuitability" should be compensated for. 201 (a) (8); (3) We believe upper limits of the operators' obligations to the state should be made definite and certain, eg:

(a) standards not beyond existing water and air quality standards

(b) standards not above those obtainable from adjoining unmined land

(c) reclamation need not be to a better condition or higher use than existed prior to mining

(d) standards should not be above those obtainable with good, then-current practice

(e) the operator need not make more than two bona-fide attempts to revegetate

We trust these comments will be of use in your deliberations and that you will call on us if we can assist in any way in arriving at an effective and equitable reclamation law.

Senator FANNIN. Thank you very much, sir. Mr. Chadwick, you have made some very constructive suggestions. Your organization, which has some 600 indiiduals, would be in a position to speak for a group which is knowledgeable in these matters.

We are all vitally concerned that we have legislation which will provide the protection to the environment—maybe that is what you would like to see done—while permitting the companies to operate properly and beneficially for this country.

We do know that there is an energy crisis. Testimony has been previously set forth which would verify your feeling in regard to the evolving crisis in the metal industry. It is very important that we realize that the tremendous imbalance of trade that is now projected for the petroleum industry cannot continue. We are in jeopardy with a $7 billion deficit balance of trade, with a future imbalance in petroleum products alone of up to $20 to $25 billion.

We have also had estimates from the mining industry that, in the event legislation is enacted, mine restoration would be difficult, perhaps making it unprofitable. Then we might face as much of a deficit in minerals as we face in petroleum products. Do you agree with that?

Mr. CHADWICK. I certainly do, Senator.

Senator FANNIN. Now, you have differentiated, and we thank you for your differentiating between S. 425 and S. 923. Do you feel that there are fewer changes needed, as I understand, for S. 923 to be placed into a workable arrangement, wherein the legislation would provide the balance of protecting the environment and still permit the mining industry to uphold it?

Mr. CHADWICK. There are some clauses in S. 923 which are not clear. The provisions for pit mining are not clear to me. From my knowledge of the bill, I think that is one of the things. The other is the uncertainty that exist in this clause about unsuitability for mining. Again, that is getting into land use rather than reclamation.

Senator FANNIN. Of course, that would be disastrous in this country if pit mining were stopped. As you know, the copper industry in the West, in the State of Arizona, where 50 percent of the copper is produced, is mostly from open-pit mining.

I am sorry that Senator Hansen had to step out, but we thank you for being with us. Will you be here for a few minutes?

Mr. CHADWICK. Surely.

Senator FANNIN. Senator Hansen may want to ask you some questions. So, if you are going to be here, he should be back very shortly. We will call on him.

Thank you very much.

Senator FANNIN. Mr. James L. Wilkinson, the next witness, is the president of the West Virginia Surface Mining and Reclamation Association. We welcome you this afternoon, Mr. Wilkinson, and we have already had reference to some of the information that you are going to furnish us. We are looking forward to hearing from you.

STATEMENT OF JAMES L. WILKINSON, PRESIDENT, WEST VIRGINIA SURFACE MINING AND RECLAMATION ASSOCIATION

Mr. WILKINSON. Thank you, Senator.

Senator FANNIN. Your complete statement will be made a part of the record and you can adjust it as you see fit.

Mr. WILKINSON. Yes sir, I will delete some of the areas.

My name is Jim Wilkinson, vice president of Kingwood Mining Co., Kingwood, W. Va. I am here today as president of the West Virginia Surface Mining and Reclamation Association, an organization comprised of 253 companies directly and indirectly involved in the surface mining of coal in West Virginia.

Our association appreciates the opportunity to be heard and I, personally, am proud to appear before this committee to express my concern for our industry and for the future of West Virginia.

Nationally, the surface mining issue has presented problems, which the Federal Government, through this and other committees, must attempt to solve. We, in West Virginia have experienced similar problems and have found answers which might be helpful in this committee's examination of proposed Federal surface mine legislation.

Surface mining in West Virginia has virtually outgrown its earlier status as an emotional issue because of proven reclamation success, increased energy-fuel requirements, and rigid enforcement of stringent State regulations.

By any yardstick of reason, those who advocate elimination of surface mining for environmental protection could only be interpreted as ill-advised and unrealistic. It is unsound because it ignores the serious and damaging consequences to the economy of both West Virginia and the Nation. At best, it is an extremist solution to what is essentially and esthetic problem.

In order to understand the full scope of the surface mining issue and how it has evolved, a review of several important points is essential.

The influence of history has weighed heavily upon the industry. Surface mining received its first major impetus during the national energy crisis of World War II. Urgent demands of war took precedence over concern for reclaiming disturbed land. Also, in those years, the science of reclaiming mined land was still in its infancy.

Today, the surface mining industry operates on a more scientific and knowledgeable basis than it did 20 or 30 years ago. The mistakes of the past are history and bear no relationship whatsoever with modern surface mining and reclamation practices.

In 1971, West Virginia amended one of the Nation's most stringent surface mining and reclamation laws. Today, West Virginia is effectively preventing repetition of past practices, while at the same time providing for total reclamation of abandoned surface mines.

A leader in mined-land reclamation, West Virginia proves that surface mining can and is being carried out responsibly—with total reclamation of all land disturbed in the mining process.

Since 1967, West Virginia has:

One, reclaimed more land than mined each year.

Two, led all States in reclamation acreage each year with a total of 27,332 acres in 1972 alone.

Three, reclaimed an average of more than 2,500 acres yearly of abandoned mines through the special reclamation fund, supported solely by the industry at no expense to taxpayers.

One main reason West Virginia leads other States in reclamation is an extensive research program conducted by the industry in cooperation with various State and Federal agencies. Over $250,000 is spent annually on various projects, including water quality, revegetation, and handling of overburden materials.

Many of the projects are still new, but important discoveries have aided reclamation specialists in attaining rapid revegetation and stabilization to eliminate soil erosion and siltation.

As surface mine operators, we take seriously our environmental obligations to the people of West Virginia. We fully support proper surface mining and reclamation methods and laws to regulate the industry. But the effect of restrictive legislation on the industry in West Virginia should be made public.

Figures from the State Department of Mines show West Virginia's surface mine coal production dropped from 27 million tons in 1970 to 21.8 million tons in 1972, a decrease of more than 30 percent. West Virginia, the leading coal-producing State since 1939, is now behind Kentucky, and nearly half the West Virginia companies operating in 1970 had gone out of business by the end of 1972.

Here, for comparison, are corresponding figures for the 2 years, as provided by the West Virginia Department of Natural Resources: 219 companies received 616 permits in 1970, 118 companies received 246 permits in 1972.

As the statistics clearly show, previously solvent companies and jobs were apparently eliminated by increased operating costs, reclamation requirements and decreased productivity, due largely to stringent legislation. Any additional legislation would virtually eliminate our industry in West Virginia.

Ironically, these reclamation requirements from the State, coupled with strict emissions and safety standards from the Federal Government, come at a time of serious shortage of natural resources for energy production. And coal is the only abundant domestic source of energy available to overcome this shortage.

Those who contend that surface mining should be drastically curtailed are apparently unaware that over 50 percent of all coal produced last year in the United States was surface mined.

It would, of course, be impossible for this Nation to function adequately without the energy derived from surface-mined coal.

In 1970, according to the National Coal Association, utilities consumed 55 percent of the domestic coal production, of which 75 percent was surface mined. Coal provided nearly 50 percent of the total kilowatt hours of electricity produced, of which half came from surface mines.

The demand for electric power is expected to double by 1980, possibly requiring twice the amount of coal consumed today, or 1.1 billion tons a year. Add another 150 million tons for conversion to gas and other uses, and the demand is 125 percent greater.

Further setbacks affecting the surface mining industry would shrink coal supplies to a dangerous level and force a sharp increase in prices. This could mean severe power shortages and higher costs to consumers at a time when we all are concerned about inflation. It also would indirectly jeopardize the Nation's coal exports when we should be attempting to improve our balance of trade with other countries.

In 1972, West Virginia produced 21.8 million tons of surface-mined coal at a total market value of more than $200 million. The same quantity of coal could provide a city of 80,000 population, or 24,000 family units, with enough electrical power to last 550 years, for residential use. Adding business and industrial power usage, that amount of coal would furnish power to a city of 80,000 for 101 years.

Any significant loss in surface mine production could not be replaced by deep mining methods. A surface mine is twice as productive as a deep mine, requires less capital investment, and can be placed into production quickly. By comparison, a minimum of 3 to 5 years is needed to develop a deep mine.

To replace the 22 million tons of surface-mined coal would require 22 new deep mines producing 1 million tons annually. At $15 per annual ton, for development costs, the total capital investment would amount to more than $330 million.

In addition, surface mining recovers coal deposits that usually cannot be mined by any other method. In most cases, surface-mined coal is found near the outcrop of mountains and other areas where rock strata is too weak to support a safe roof for deep mining.

Surface mining has also played an increasingly important role in the expansion of underground mining, by opening up previously unaccessable areas. Haul roads and bench areas created by surface mining help minimize initial costs of deep mine development.

In recent months there has been much publicity about a major shift in the industry to develop the vast western coal fields. But the tremendous percentage of high-quality coal for metallurgical use is still located in the Eastern United States. It is for this reason that the major electrical generation and metallurgical facilities are also located in the East, taking advantage of shorter hauling and lower transportation costs.

The large deposits of western coal are mostly subbituminous and lignite which are low in Btu content and high in ash. It is questionable whether the utilities can afford to transport this low-quality coal from western fields to eastern markets.

The average Btu content of eastern coal is 12,000 as opposed to 8,000 Btu of western coal. Of course, the great majority of this high quality, low-sulfur eastern coal lies in the mountainous Appalachian area. Therefore, we are concerned about any provisions for slope restrictions. Presently, surface mines throughout Appalachia are producing about one-third of all the low-sulfur coal burned for power generation. Obviously, we cannot afford to sacrifice this production.

In West Virginia, the problem is even greater. Last year, the House of Representatives passed a bill that would have restricted placement of permanent overburden on slopes greater than 14°, but few people realize that the average median slope in West Virginia is 14°. A specific example may better illustrate our concern. McDowell County in the

southern part of the State is the largest coal-producing country in the United States; 90 percent of the land surface of McDowell County is is in excess of 20°. Any slope limitations could easily eliminate the industry in West Virginia.

On February 11, 1972, the Stanford Research Institute of Palo Alto, Calif., released an in-depth study revealing the impact of surface mining on the economy of West Virginia. SRI was commissioned for the $75,000 project by the Joint Committee on Government and Finance of the West Virginia Legislature to provide factual information as a basis for future surface mine legislation. Several of the outstanding points brought out in the report were as follows:

First of all, according to the Stanford report, 9,358 jobs are a direct result of the surface mining industry in West Virginia; 5,720, surfacing mining; 1,750, railroads; 179, barge lines; 560, trucking; and 1,149, supplies, services, and equipment.

Most of these jobholders have families. Based on 1970 Census Bureau figures, the average family in West Virginia consists of 3.17 persons. That would mean that 29,676 persons in West Virginia depend upon surface mining for food, housing, and clothing.

Second, deep mines often depend on surface mining for three primary reasons.

First, blending for proper sulfur, ash, or Btu content.

Second, offsetting high costs of underground production.

Third, opening up and developing previously unaccessible underground reserves.

This is supported in the Stanford study, which says "the implications of surface mining relative to deep mining employment are apparently significant."

According to SRI, deep mining could not be significantly increased to offset surface mining production and employment.

"In fact," SRI says, "surface mining has been the principal means for maintaining total production levels and for inference, therefore, helping to sustain at least a portion of the total deep mine employment * * *. If surface mining operations are related to deep mine employment in the same proportion as is production, then approximately 6,000 to 8,000 deep miners are affected in some way by surface mining."

Third, Stanford estimated the total economic impact of surface mining in West Virginia at more than $210 million annually. The report also said the economic impact is felt unevenly in the State, being most pronounced in counties where coal mining is the primary industry.

This includes $81.2 million annual payroll; $59.6 million for supplies and services; $56.9 million for transportation of surface-mined coal; and $12.9 million in State and local tax revenues.

Tax sources listed by the SRI include the business and occupation, workmen's compensation, county property, and corporate net income, plus additional revenues through local and State sales taxes.

Finally, beyond the direct contribution to the economy by surface mining, coal hauling, and mine equipment industries, there is a second cycle of monetary expansion among nonrelated businesses.

Economists have determined that, to measure accurately the effect wages have on the economy, wages should be multiplied three times, on

the basis that every dollar spent will generate three other dollars in trade as it circulates through commercial channels.

In 1971, for instance, the annual $81.2 million payroll in surface mining and related industries probably generated another $243.6 million of business through year-long purchasing of consumer items, such as food, clothing, housing, and transportation. Local businessmen, in turn, must hire clerks, salesmen, and other employees to satisfy demands generated by surface mining and related industry payrolls.

It is inconceivable that the Federal Government would be willing to sacrifice economic considerations of this magnitude.

The surface mining industry has a strong sense of responsibility in supplying the Nation's demand for coal and returning surface-mined land to be beneficial use.

In conclusion, the industry, as represented by the West Virginia Surface Mining and Reclamation Association, supports comprehensive legislation establishing criteria for achieving sound reclamation and requiring States to develop and enforce regulations to meet Federal standards.

However, the association opposes any Federal legislation that would selectively prohibit surface mining of coal in West Virginia.

In general, I believe the following recommendations should be given major consideration in dealing with Federal surface mine legislation.

One, any bill to regulate the surface mining industry should include all minerals.

Two, Federal programs should be implemented only if States are unwilling or unable to enforce Federal guidelines.

Three, due to differences in terrain from State to State, there should be no finite numerical limitations on highwall heights, degree of slope, bench width, and regrading.

Four, there should not be provisions specifying compaction or regarding to the approximate original contour because requiring only these in every instance is not environmentally sound. For example, compacting materials makes revegetation extremely difficult after the mining process. Also, returning the land to the approximate original contour in some areas has proved to be a cause of extensive erosion and siltation.

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Senator FANNIN. Thank you.

[The complete statement of Mr. Wilkinson follows:]

HEARING ON FEDERAL SURFACE MINING LEGISLATION

TESTIMONY OF THE

WEST VIRGINIA SURFACE MINING AND RECLAMATION ASSOCIATION

BY

JAMES L. WILKINSON

PRESIDENT

SENATE COMMITTEE

ON INTERIOR AND INSULAR AFFAIRS

MARCH 16, 1973

93-213 O - 73 - pt. 2 -- 31

Statement of James L. Wilkinson
President of West Virginia Surface Mining
and Reclamation Association

Mr. Chairman and Members of the Committee:

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Finally, beyond the direct contribution to the economy by surface mining, coal hauling and mine equipment industries, there is a second cycle of monetary expansion among non-related businesses.

Economists have determined that to measure accurately the effect wages have on the economy, wages should be multiplied three times, on the basis that every dollar spent will generate three other dollars in trade as it circulates through commercial channels. (A multiplier of 3 is conservative; in many areas a factor of 5 or 7 is common.)

In 1971, for instance, the annual $81.2 million payroll in surface mining and related industries probably generated another $243.6 million of business through year-long purchasing of consumer items, such as food, clothing, housing and transportation. Local businessmen, in turn, must hire clerks, salesmen, and other employees to satisfy demands generated by surface mining and related industry payrolls.

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APPENDIX

WEST VIRGINIA RECLAMATION BY YEAR

YEAR	S.C.D.	OPERATOR	SPECIAL RECLAMATION AND BOND FORFEITURE	TOTAL
1961	878.00			878.00
1962	2,471.08	600.00		3,071.08
1963	2,574.05	460.00		3,034.05
1964	2,373.70	605.00	25.30	3,004.00
1965	3,668.10	901.00	786.60	4,335.70
1966	3,213.20	690.50	2,753.57	6,657.20
1967	4,100.36	740.00	2,552.68	7,303.04
1968	8,956.37	9,054.86	1,199.87	19,918.00
1969	8,253.11	4,463.41	4,400.88	17,117.40
1970	5,355.88	5,985.72	1,903.87	13,245.47
1971	5,352.92	12,321.01	2,695.76	20,369.69
1972	3,665.19	20,052.50	3,604.87	27,332.52

Source: West Virginia Department of Natural Resources

ACRES RECLAIMED

	1971	1970	1969	1968	Total	*1970 Surface Production
WEST VIRGINIA	20,369	13,245	17,117	19,918	70,649	27,657
KENTUCKY	18,481	11,703	7,171	9,800	47,155	62,695
PENNSYLVANIA	10,259	9,089	9,914	10,811	40,073	25,108
OHIO	9,230	12,972	12,459	11,105	45,766	37,240
ILLINOIS	5,354	5,253	5,478	9,820	25,905	33,026
INDIANA	3,510	3,938	3,701	1,730	12,879	20,169
VIRGINIA	3,013	2,682	1,915	2,125	9,735	6,998
OKLAHOMA	2,780	1,427	723	465	5,395	2,208
MISSOURI	2,664	1,229	1,655	2,332	7,881	4,447
TENNESSEE	2,456	650	1,214	1,609	5,929	3,886
						(Thousand short tons)

*Source: U.S. Bureau of Mines

Reclamation figures not available for other states for 1972.

PROVEN RECOVERABLE RESERVES OF MAJOR ENERGY FUELS

FUEL		QUANTITY			ESTIMATED TIME
OIL	--	52	Billion Barrels	--	10 years
GAS	--	3,000	Trillion Cubic Feet	--	11 years
URANIUM	--	450,000	Tons	--	13 years
SHALE OIL	--	160-600	Billion Barrells	--	35 to 120 years
COAL	--	1.5	Trillion Tons	--	500 years

Source: U. S. Geological Survey

Strippable Reserves of Coal

(Millions of tons)

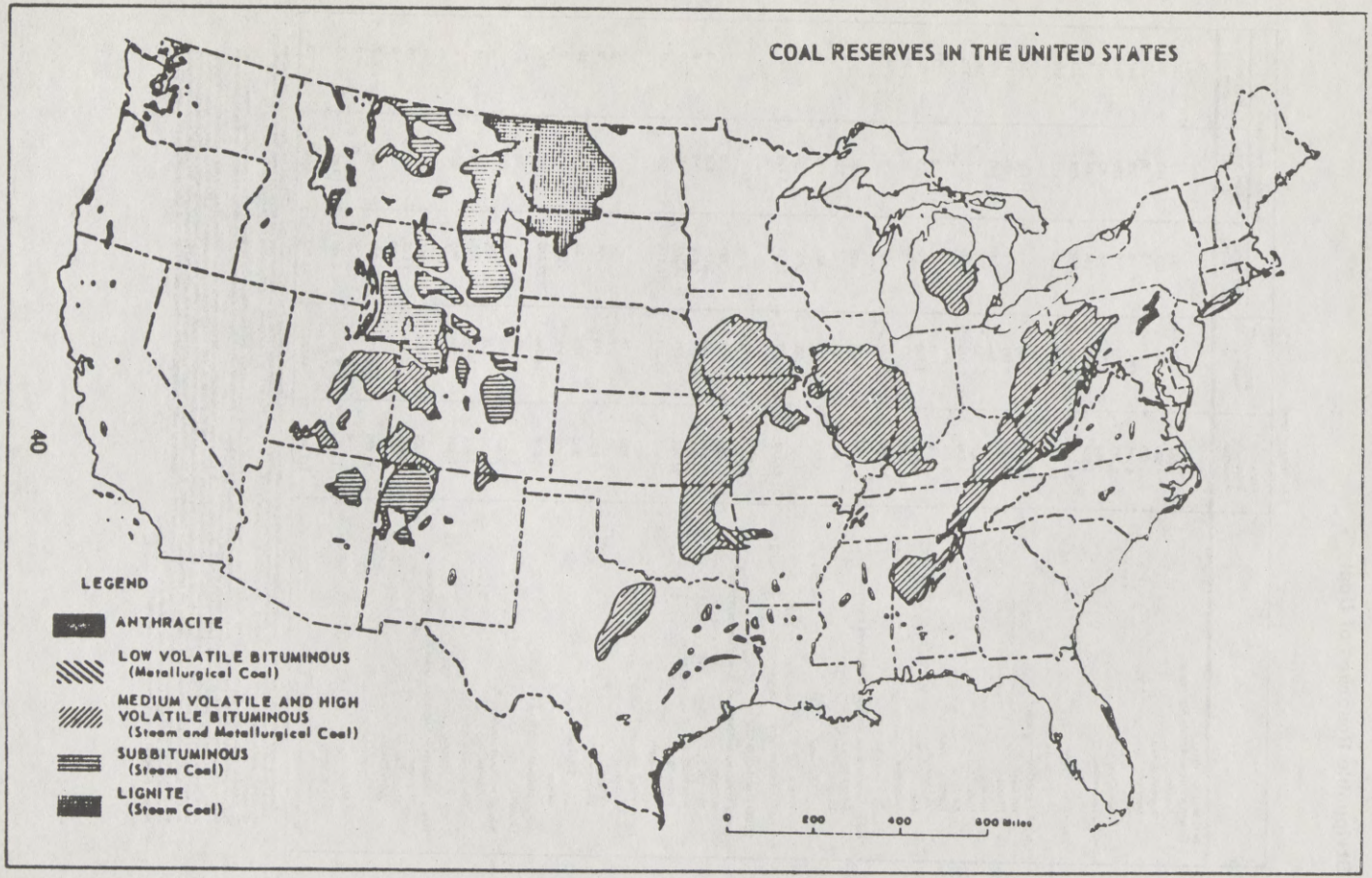
Rank	Remaining * Strippable Resources	Strippable ** Reserves	Strippable Reserves		
			Low Sulfur (less than 1%)	Medium Sulfur (1 - 2%)	High Sulfur (over 2%)
BITUMINOUS COAL					
Eastern province—Appalachian region:					
Alabama	667	134	33	74	27
Kentucky—east	4,609	781	532	189	60
Maryland	150	21	0	8	13
Ohio	5,566	1,033	0	126	907
Pennsylvania	2,272	752	0	225	527
Tennessee	483	74	5	43	26
Virginia	1,556	258	154	99	5
West Virginia	11,230	2,118	1,138	669	311
Subtotal	26,533	5,171	1,862	1,433	1,876
Interior and Gulf provinces:[1]					
Arkansas	200	149	3	118	28
Illinois	18,845	3,247	0	80	3,167
Indiana	2,741	1,096	0	293	803
Iowa	1,000	180	0	0	180
Kansas	1,388	375	0	0	375
Kentucky—west	4,746	977	0	0	977
Michigan	6	1	0	0	1[2]
Missouri	3,425	1,160	0	0	1,160
Oklahoma	434	111	10	44	57
Subtotal	32,785	7,296	13	535	6,748
Rocky Mountain and Northern Great Plains provinces:[3]					
Colorado	870	500	476	24	0
Utah	252	150	6	136	8
Subtotal	1,122	650	482	160	8
Alaska	1,201	480	480[4]	0	0
Total bituminous	62,826	13,597	2,837	2,128	8,632
SUBBITUMINOUS COAL					
Rocky Mountain and Northern Great Plains provinces:[5]					
Arizona	400	387	387	0	0
Montana	7,813	3,400	3,176	224	0
New Mexico	3,307	2,474	2,474	0	0
Wyoming	22,028	13,971	13,377	65	529
Subtotal	33,548	20,232	19,414	289	529
Pacific Coast province:[6]					
California	100	25	0	0	25
Oregon	0	0	0	0	0
Washington	500	135	135	0	0
Subtotal	600	160	135	0	25
Alaska	6,190	3,926[4,7]	3,926[4,7]	0	0
Total subbituminous	40,338	24,318	23,475	289	554
LIGNITE					
Interior and Gulf provinces:[8]					
Arkansas	32	25	25	0	0
Texas	3,272	1,309	625	684	0
Subtotal	3,304	1,334	650	684	0
Rocky Mountain and Northern Great Plains provinces:					
Montana	7,058	3,497	2,957	540	0
North Dakota	5,239	2,075	1,678	397	0
South Dakota	399	160	160	0	0
Subtotal	12,696	5,732	4,795	937	0
Alaska	8	5	5	0	0
Total lignite	16,008	7,071	5,450	1,621	0
Grand total United States	117,987	44,986	31,762	4,038	9,186

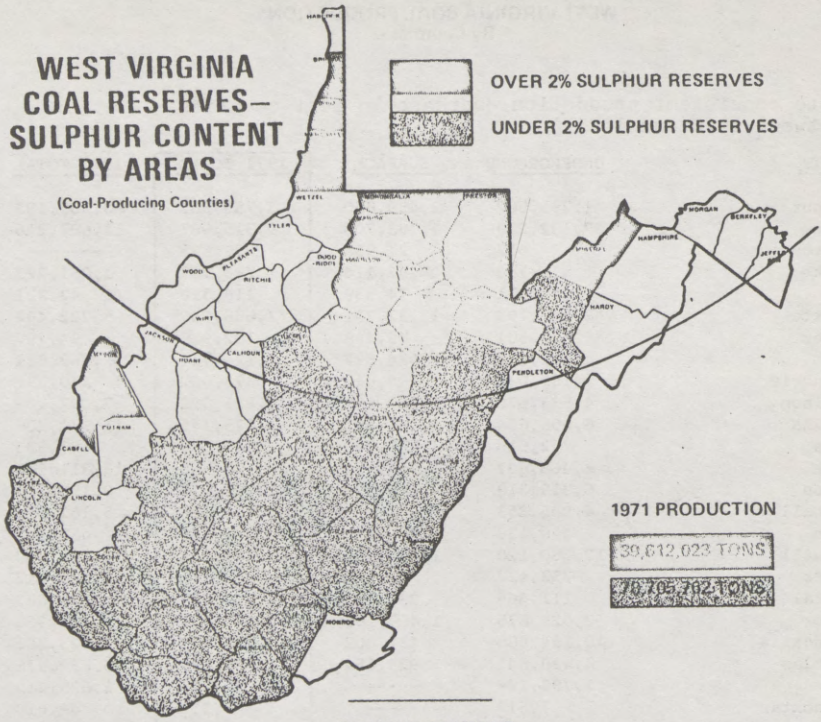
*"Remaining strippable resources" means coal still in the ground in beds of at least minimum thickness and under less than maximum overburden. "Resource" figures do not consider whether the coal can be mined economically. Seam thicknesses are generally at least 28 in. for bituminous coal (12 to 18 in the Midwest) and 60 in. for Texas, the Rocky Mountain, Northern Great Plains and Pacific Coast provinces. Overburden is limited to 120 ft. in the East, 90-150 ft. in the Midwest and (depending on the coalbed) 50-250 ft. in the rest of the country.

** "Strippable reserves" means that part of the strippable resources which can be economically recovered with existing strip-mining technology. This is generally determined by the "stripping ratio," which is the number of feet of overburden per foot of coalbed thickness. The strippable reserve figures exclude coal which cannot be mined because of topography, natural and manmade features such as rivers and towns, and other limitations.

1. Bituminous coal resource and reserve not estimated for Texas and Nebraska. 2. There may be isolated areas of some seams which might be classed in the medium-sulfur category. 3. Bituminous coal resource and reserve not estimated for Montana, New Mexico, Idaho, and Wyoming. 4. 478 million tons of bituminous and 3,387 million tons of subbituminous coal reserves in the northern Alaska fields (North Slope) are included in the estimates even though an economic export market, which is essential for exploitation, does not currently exist. 5. Subbituminous coal resource and reserve not estimated for Colorado. 6. Bituminous coal resource and reserve not estimated for Washington; the subbituminous coal resource and reserve estimated for Oregon is less than 1 million tons. 7. Includes 179 million tons of undifferentiated subbituminous coal and lignite. 8. Lignite resource and reserve not estimated for Kansas, Mississippi, Louisiana, and Alabama.

Source: Bureau of Mines, Information Circular 8531


COAL RESERVES IN THE UNITED STATES
LEGEND
ANTHRACITE
LOW VOLATILE BITUMINOUS (Metallurgical Coal)
MEDIUM VOLATILE AND HIGH VOLATILE BITUMINOUS (Steam and Metallurgical Coal)
SUBBITUMINOUS (Steam Coal)
LIGNITE (Steam Coal)
0
200
400
600 Miles



SULPHUR CONTENT OF COAL RESERVES* IN WEST VIRGINIA

Sulphur Content	Estimated Tons of Reserves	% of Total Reserves*
0.7 or less	20,761,000,000	20.22
0.8 to 1.0%	26,710,600,000	26.02
1.1 to 1.5%	21,819,700,000	21.25
1.6 to 2.0%	13,290,600,000	12.95
2.0 to 2.5%	8,496,100,000	8.28
2.6 to 3.0%	2,491,800,000	2.42
3.1 to 3.5%	3,147,400,000	3.07
3.6 to 4.0%	5.949,200,000	5.79
4.0% - over	-------	--
TOTAL RESERVES*	102,666,400,000	100%

*--Total reserves are "all" known reserves, distinguished from "mineable" or "recoverable" reserves--which in West Virginia are estimated at 57.9 billion tons.

Source: U. S. Bureau of Mines

WEST VIRGINIA COAL PRODUCTION
- By Counties -

(Note consistent production decrease in most counties between 1970 and 1971.)

COUNTY	UNDERGROUND	SURFACE	1971 TOTAL	1970 TOTAL
Barbour	1,295,502	2,459,850	3,755,352	3,505,193
Boone	7,132,279	2,783,708	9,915,987	11,607,216
Braxton	677	21,958	22,635	------
Brooke	511,153	282,114	793,267	1,051,223
Clay	43,971	74,339	118,310	43,221
Fayette	2,547,707	1,137,331	3,685,038	5,222,442
Gilmer	23,501	79,428	102,929	94,797
Grant	1,510,177	614,537	2,124,714	2,569,381
Greenbrier	185,044	188,018	373,062	440,397
Harrison	4,533,670	1,287,352	5,821,022	7,097,109
Kanawha	6,206,654	3,466,521	9,673,175	11,971,706
Lewis	2,516	541,048	543,564	687,333
Logan	8,468,807	1,714,151	10,182,958	13,311,908
Marion	6,919,310	146,309	7,065,619	9,156,111
Marshall	4,805,353	-----	4,805,353	5,161,974
Mason	420,138	-----	420,138	457,340
McDowell	12,330,120	1,049,084	13,379,204	16,466,540
Mercer	753,422	83,989	837,411	1,095,417
Mineral	111,365	266,135	377,500	273,062
Mingo	2,022,675	1,469,282	3,491,957	2,964,968
Monongalia	10,154,680	431,300	10,585,980	12,523,361
Nicholas	4,420,041	923,654	5,343,695	6,839,916
Ohio	1,796,279	-----	1,796,279	2,625,415
Pocahontas	7,517	-----	7,517	42,019
Preston	635,842	1,270,738	1,906,580	2,470,330
Raleigh	5,292,784	2,292,442	7,585,226	9,811,230
Randolph	335,540	522,156	857,696	629,243
Summers	-----	700	700	21,429
Taylor	-----	190,732	190,732	219,101
Tucker	-----	376,135	376,135	300,044
Upshur	281,660	892,842	1,174,502	879,319
Wayne	274,576	9,655	284,231	98,226
Webster	124,988	51,444	176,432	255,530
Wyoming	9,255,095	1,287,790	10,542,885	13,207,870
TOTALS	92,403,043	25,914,742	118,317,785	143,132,284

Source: West Virginia Department of Mines

BIBLIOGRAPHY

American Mining Congress. What Mining Means To The United States. Washington, D. C. March, 1972.

National Coal Association. Impact Of Surface-Mined Bituminous Coal and Lignite On U. S. Energy Sector. Washington, D. C. 1972

Stanford Research Institute. A Study of Surface Coal Mining In West Virginia. Menlo Park, California: February 11, 1972

West Virginia Coal Association. West Virginia Coal Facts. Charleston: 1972

West Virginia Coal Association. "Can West Virginia Coal Stay In The Black?" Charleston: July 28, 1972

National Coal Association. Bituminous Coal Facts, 1972. Washington, D. C.

Newsweek. The Energy Crisis. New York: January 22, 1973

West Virginia Department of Natural Resources: Status Report. Charleston: December, 1972

Wheat First Securities. Black Gold - A Case For Coal Richmond, Virginia, February, 1973.

Senator FANNIN. Senator Randolph of West Virginia has come into the room, and we are always very pleased to have him with us. He is chairman of the Public Works Committee and is certainly knowledgeable and highly informed on the subject of mining, coal mining. I will yield to the visiting Senator to see if he has any questions.

Senator RANDOLPH. I think, Mr. Chairman, those of you who were privileged to hear the testimony would want to perhaps have colloquy and, if I feel it is important, I will follow you. Thank you.

Senator FANNIN. Thank you very much, sir.

Mr. Wilkinson, you have made a very fine statement, and I commend you. Some of the information you have utilized comes from the Stanford Research Institute Report. Who paid for that report?

Mr. WILKINSON. The West Virginia Legislature.

Senator FANNIN. Then, I would ask your Senator, do we have that report available, the Stanford Research Report?

Senator RANDOLPH. Yes, we have it available. I can secure it very quickly. I would be very happy to have the subcommittee have that report.

Senator FANNIN. Thank you very much. Because the witness has used information from that report, very advantageously and beneficially, and I have no thought of questioning any of his statements.

But this morning, I don't know whether you were here or not, Mr. Wilkinson, but the report, by another witness, was adverse to the best interest of mining, especially of strip mining in West Virginia and Appalachia. So, I am glad that the report is available, and we can utilize the information. Not to verify your statement, but to clarify a misunderstanding that may exist.

I noticed that you stated, on page 2 of your statement, that West Virginia, in 1971, was one of the Nation's most stringent surface mining and reclamation laws effectively preventing repetition of past practices, while at the same time providing for total reclamation of abandoned surface mines. That certainly is a commendable action that has been taken.

Did you use the figure, it is averaged at about 2,500 acres a year greater than the amount of land that is being mined?

Mr. WILKINSON. So, sir, that 2,500 acres represent the older mined lands that are being reclaimed by the special reclamation fund each year.

Senator FANNIN. That is what I say. In other words, the land is being mined, and, as the time comes, it is also being reclaimed. And in addition to that, you are recovering about 2,500 acres of land that was vacated some years ago, is that right?

Mr. WILKINSON. Yes, sir; this fund was actually started in 1963 in West Virginia, the special reclamation fund.

Senator FANNIN. It is no expense to the taxpayers, it is an industry fund?

Mr. WILKINSON. There was a fee created whereby each operator paid a certain amount per acre, as he got new permits.

Senator FANNIN. To what do you attribute the decrease in production, as I understand it, 30 percent from 1970 to 1972?

Mr. WILKINSON. Well, some of that has been incapabilities of some of the smaller companies being able to get the higher amount bonding

capabilities. We are talking about other regulations besides reclamation regulations. We are talking about air pollution.

Senator FANNIN. Do you cover that in the charts, sir, or in other information that you can furnish to us?

Mr. WILKINSON. No, sir, but we will.

Senator FANNIN. I think it would be very helpful if you could, because I was very surprised with the tremendous increase in utilization of energy. I think we all agree that, presently, there is no other source but coal to meet the increased demand for electricity, at least for the foreseeable future.

Personally, I am concerned when we learn that there has been that drop.

Well, thank you very much, Mr. Wilkinson.

Senator Hansen.

Senator HANSEN. Mr. Wilkinson, thank you for a very excellent statement.

If standards were to be imposed legislatively, ruling our mining on surfaces of 14° or those in excess of that degree of slope, what sort of employment do you think the people in those affected areas might look to or anticipate finding if they were not engaged in the mining business?

Mr. WILKINSON. I think West Virginia, especially southern West Virginia, is like the rest of Appalachia. I think coal mining is the primary industry, and I think you will see a greater decrease in population in our southern mountains than we have now.

Senator HANSEN. I have no further questions, Mr. Chairman.

Senator FANNIN. Senator McClure.

Senator MCCLURE. Mr. Chairman, thank you very much.

Mr. Wilkinson, were you here this morning, to hear the testimony this morning?

Mr. WILKINSON. Yes, sir.

Senator MCCLURE. Were you here when Reverend Lloyd and James Coen testified?

Mr. WILKINSON. Yes, sir.

Senator MCCLURE. I think you will be struck by the fact that both of you know much more about West Virginia conditions than do I, and by information coming from witnesses who have appeared to testify, and people who live in West Virginia with whom I have conversed.

But your opinions, as expressed in your statement, are almost diametrically opposite of those. On page 1 of your statement, it says that "it is an extremist solution to what is essentially an esthetic problem."

On page 2 of your statement you say: "The mistakes of the past are history and bear no relationship whatsoever with modern surface mining and reclamation practices."

Then I go back to the statement of Reverend Lloyd he quotes many statements. They apparently are current statements from people who live in the area, who refer to mud, knee deep, $3,000 damage to a house, blasting damage, boulders coming down through the roof from blasting.

Allegedly, at least, contemporary with the present time and not to past practices that belong to history rather than the current practice. I wonder if you would care to comment any further?

Mr. WILKINSON. Yes, I would. No. 1, I would like to see the instances he is talking about documented. These are the ones referred to as the Buffalo Creek disaster. And all investigations on the particular situation have proven that it was not surface mining.

While this was a mud situation, you know, in the steep mountains in West Virginia, our natural ground, when we get some of the tremendous rainfalls that we have had in the past year, we get mud slides, we get creeks flowing over the banks. We just don't believe, and evidently some of the State agencies and the Department of Resources does not believe, that the surface mining is a contributing factor to most of these cases that are cited.

Senator MCCLURE. Mr. Coen, in his statement, referred to the Stanford research report, and I hope that we will have that available to us so that I can examine it to make some of my own evaluations.

He made the statement, not directly from the report, but in context with the report, that erosion is 1,000 times as great on strip mining land as under normal conditions.

At another point in his statement, the Stanford Research Institute delineates a 12° slope as the maximum for allowing a regrading to the original contour of the land, and 20° on spoil banks.

And so I found that in West Virginia alone two thirds of the attempted reclamation failed in terms of vegetated cover. These are quite the opposite of the statement which you make.

Mr. WILKINSON. I would very much like for you to read the total Stanford report, because it is objective, and they were dealing with surface mines of the past.

Now, this report was made in 1970 and 1971. A lot of the areas that they explored were often areas that were mined back in the 1940's and 1950's. And, also, they explored the operation—Senator, I don't mean to tell you that we have all the answers. We wouldn't have the research program going if we had. We are looking for answers every day, and we don't have them all, we have problems. But hopefully we can find the answer.

Senator MCCLURE. On page 4 of your statement you made another statement which, I think, bears some comment—when you say "any significant loss in surface mine production would not be replaced by deep mining methods," and you point to a time lapse of from 3 to 5 years to develop a deep mine. And you point to total capital investment which is required, and I think that is significant for us to know in terms of how do we get from where we are to where we want to be. Whether or not we can, indeed, make arbitrary and immediate shifts without the location. I think that we should bear in mind that everyone wants to be an underground miner. There are particular breeds of people, I have them in my own State, although they are not in coal mines, and they are people that I admire and respect very much. But they are not the kind of people you just go out and recruit on the streets of any town at any given particular time.

It is a tough job, and at best a hazardous one still, although I am very much encouraged, and I think, perhaps, you would agree that the statistics on both fatal and nonfatal accidents are improving. The last year or two we have seen some marked improvements; is that not correct?

Mr. WILKINSON. I think that is right, yes. Other than a few major disasters we have had, everything seems to be improving.

Senator MCCLURE. We don't have all the answers there, but we are finding some and hope that that is indicative of what we can do.

I thought another portion of your statement was important. On page 6, where you refer to the blending of surface and subsurface coals, both in terms of their marketability and usefulness as well as price. And, also, the fact that subsurface depends to some degree on surface mining. That appears on the very bottom of the page. Could you expand on that a little bit because of price?

Mr. WILKINSON. I might give you an example. In our particular situation, my operation in the northern part of West Virginia in the upper Freeport seam of coal. This particular seam of coal is deep mined with continuous mining equipment. It is rock really, it is an ash content of material. So, consequently, the ash content of the deep-mine coal is higher than the surface-mine coal because in the surface mining they split below the coal seam, and in this way it is blended to get the right ash content.

We are in the process where they are blending about 3 tons of surface-mined coal to 1 ton of deep-mined coal.

Senator MCCLURE. Your company is involved in both surface and subsurface mining?

Mr. WILKINSON. Yes, sir.

Senator MCCLURE. Thank you very much. Your testimony has been very helpful, and I will look forward to seeing the SRI report.

Senator FANNIN. Senator Randolph.

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

I will be very brief. I want to indicate that, although I have not been present, I have attempted to keep as close to the hearing held yesterday and today as possible.

As my colleagues know, I have had to be on the Senate floor for 2 days, concerned with other types of legislation. And I do note that you have had now, not companies operating in West Virginia or organizations that certainly have an interest in West Virginia. Those include West Virginia, as other States, but directly we have had testimony from West Virginia.

Representative Heckler appeared, and he had advocated abolishment of strip mining, not only in West Virginia, but in other States. Is that correct?

Senator FANNIN. That is correct, Mr. Chairman.

Senator RANDOLPH. And, also, yesterday afternoon you had the testimony of Dr. William Miernak, and Dr. Robert Smith, both from West Virginia University. And although I have not been privileged to follow their testimony, I believe that, even though they were not to the point of abolishment, they were close to it. Is that correct?

Senator FANNIN. They were very critical, yes, sir.

Senator RANDOLPH. If the most strict regulation in the industry is to continue and, I believe, emphasis from at least one of the doctors from the university indicated that trees could not be grown on the mined land, but only grasses and certain types of vegetation. Is that correct?

Senator FANNIN. I did not have the opportunity to hear the full testimony. I am notified that that is correct.

Senator RANDOLPH. And then this afternoon, Mr. Chairman, part of the testimony has been from David Ozmina, chairman, Steering Committee for Surface Mine Research in West Virginia. And with your indulgence, I would like to ask the president of West Virginia Surface Mining and Reclamation Association, who is still at the witness table, if it has not been placed in the record. I would like to have that placed in the record in detail or if you can just explain it, as you testify informal.

Mr. Wilkinson, who organized the steering committee?

Mr. WILKINSON. The West Virginia Surface Mine and Reclamation Association, and the Department of Natural Resources.

Senator RANDOLPH. Then, it was both governmental and private in nature, is that correct?

Mr. WILKINSON. Yes, sir.

Senator RANDOLPH. What is the funding procedures?

Mr. WILKINSON. It is a tripartite agreement. The State of West Virginia, through the department of natural resources, furnishes a third of the money, our association a third of it, and the U.S. Forest Service assumes the other third.

Senator RANDOLPH. And when was it created or when did it begin its work?

Mr. WILKINSON. The latter part of 1967.

Senator RANDOLPH. What would you say—on the testimony of Mr. Ozmina, who was here today, what would you say has been the study to date?

Mr. WILKINSON. It has had several thrusts, but the most important part of the research has been the stabilization of steep slopes and the siltation control in the steep slopes.

Also, in the realm of placing of overburden to eliminate slides and siltation.

Senator RANDOLPH. You think the value of the study has been of aid to a better understanding of the problem?

Mr. WILKINSON. Yes, sir, there is no question it has been a tremendous aid.

Senator RANDOLPH. Are you continuing in the effort?

Mr. WILKINSON. We are planning to expand that.

Senator RANDOLPH. Mr. Chairman, the two bills that are actually before the Senate are the measures. S. 425, submitted by the chairman of this committee, Mr. Jackson and others, and S. 923, the bill introduced by Senator Jackson, with cosponsorship with Mr. Fannin and, I believe, that really is the administration measure. Is that correct?

Senator MCCLURE. Yes, sir.

Senator HANSEN. The answer is yes, sir.

Senator RANDOLPH. Now, I am going to ask with your consent, Mr. Chairman, that prior to the testimony of Mr. Ozmina and Mr. Wilkinson that a statement, that I shall supply for the committee—I would like to have been here to present it, but because of the work in connection with highway development, consuming my time, at the present, on the floor for 2 days. In fact, I could only come at this hour this afternoon. But that statement, if you would permit me, to be printed as if read, rather than in small type, if it is agreeable—I have appeared in person. We will work the finalization of that statement out

and have prepared material in the past on the subject matter as it has been before us, and I would like to do it in that way, if it is agreeable.

Senator HANSEN. Without objection, so ordered.

Senator RANDOLPH. And the statement will indicate what I now say to this hearing, that I do not believe in the abolishment of surface mining in West Virginia or, in fact, in any State. I believe that surface mining is to be regulated in the very strictest manner. I believe that there are areas that should never be mined. I believe the penalties for a violation of the strip-mining or surface-mining regulations should so very high, to use that word, that no one would attempt to do that, which would call for the fine, such a sum that the mining company would certainly think, not once, but many times before a violation would take place.

Now, I come to the further fact, that I am a person who believes, always if we can do if, to include the very strong environmentalist factors in whatever we are attempting. I have done that in connection with the legislation that you joined in on Monday. In reference to a massive fuels and energy program before this country, the very realist solution which I offer which comes before this committee set forth the environmental factors is one of the most important as we undertook a study some 22 months ago. And so there is no lack of my interest, intense interest in the environmental side of whatever is done as the continuance of this industry.

I believe that energy and environment can stand side by side, not against one another. I believe that that can be done and I believe that men can be employed in the industry of surface mining. And that we can also reclaim the land to an adequacy of degree, acreagewise and otherwise, to make it possible to do under, and I repeat, the strictest of regulatory practices in industry so vital to the energy needs of our country, to the employment of people and, generally, to the strengthening of our economy in every way.

Senator HANSEN. The Chair would like to note that it has listened very closely to the observations by the distinguished Senator from West Virginia. In the Chair's opinion, there is no question as to the great record that has been written as to the actions and the efforts on the part of the Senator from West Virginia.

Considering the law and all those concerns that he so appropriately just now expresses, I can say from a personal observation that he takes, I think, a very sound position in recognizing that we learn from the past. If we are intelligent enough to observe the past, and indeed he is, there is no question that we can correct errors. What we have done in the past can be done better in the future. I join with you in saying that this is what we want to do. There can be little doubt that most Americans feel, most sincerely, that we all want to join in a crusade to make this land of ours a better land to live in tomorrow for our children and for the the sake of their children.

We want clean air, and we want pure water, and we want a beautiful landscape. In working to achieve those goals, the Senator from West Virginia has demonstrated his singular and very courageous leadership in taking what, I think, is a very reasoned position.

Let's see how we can provide ourselves and those who follow us with the means to live even better than we now live. There are people

who are completely satisfied with the quality of life in America today. We have a number of them in Wyoming, and I am sure you have some in your State. They are people who are able to satisfy their material requirements and expectations in about any fashion they desire. However, it is also true that there are a great many people in America that don't live as well as they would like to live. There are people throughout the world who don't live as they would like to live.

For those who live in very inadequate housing, for those who have no jobs, for those who for one reason or another have to live in very substandard conditions, I think the concerns of the Senator from West Virginia are most appropriate.

If we are going to have the kind of country that, I am sure, all of us would like to have, we must pursue twin goals. On one hand we must do what we can to make our environment better. On the other hand, we must see that this Nation moves forward.

There is another very compelling reason why we should take these steps that have been recommended by the Senator from West Virginia. This country has a very important international role to discharge right now, at this time, at this moment in history.

We can continue to bring our great powers to bear on the side of the extension of peace. We might hope, to some extent, by example and through other means, to help other people everywhere live better.

I cannot escape the conviction that most Americans, most West Virginians, want to pursue these goals simultaneously. Because of that conviction, I join with you, Senator. I say that to the present occupant on the witness stand, to point out that I think it is the responsible course. At least, it is a course to which I want to lend my weak effort in trying to help achieve goals that, I believe, are to reflect the ambitions and the hopes of all.

I appreciate your coming over. I know how busy you have been. I know how much we have depended upon your continued presence on the floor in these last 2 days, not only to represent West Virginia, but to represent most of the Wyoming people as well. I am grateful for that.

Senator RANDOLPH. Mr. Chairman, I must not respond to what you have said, except to express appreciation and to indicate to you that there is a need, of course, with changing times to face the challenge of these changing times.

It was said a long time ago, in the crisis that President Lincoln understood full well. He indicated in these words, something that is applicable today; he said: "The dogmas of the quiet past are inadequate for the stormy present. We must think anew, we must act anew, and we must disenthrall ourselves and certainly," he went on to say, "if we do that, we can save our country."

I think it is very important that we do constantly keep our thinking very, very new. Keeping our acting very positive, and sometimes forget that which we might ascribe to the status quo. Not necessarily because it was done yesterday it was wrong because it was done then, but we must not cling to something because it had a certain length of history built in it.

So, I trust that out of this committee there can come well-reasoned legislation. I think there is an urgency about the passage of a measure, by not only the Senate but by the House, that can contribute to the

tightening, if that is the correct word, of surface-mining production, and yet continue to pour into the nergy needs of this country the vital coal which comes from the source.

Thank you, Mr. Wilkinson. I will read your testimony as I will the testimony of all our witnesses.

Thank you.

Senator FANNIN. Thank you very much, Mr. Wilkinson.

Next, we will hear from Mr. B. V. Cooper, executive director, Virginia Surface Mining and Reclamation Association.

Senator HANSEN. Let me say, Mr. Cooper, that your entire statement will be included in the record as read. If you would care to highlight, in order that you might emphasize one other particular benefit here this afternoon, those points that you feel are most salient and most important, you are welcome to do that. If you would just accommodate us, we could focus upon the important points you raised a little better.

STATEMENT OF B. V. COOPER, EXECUTIVE DIRECTOR, VIRGINIA SURFACE MINING AND RECLAMATION ASSOCIATION

Mr. COOPER. Mr. Chairman, we have a mutual goal, because I have an airplane to catch, and I would certainly use your suggestion there, and if I may, sir, I would like to ask Mr. Leonard Womble to join me here. Mr. Womble is chairman of our legislative committe and is a former consulting engineer from southwest Virginia, and is now a surface mining operator.

Senator HANSEN. Mr. Womble, for the benefit of the record, if you will write down your full name and the organizations that you represent, we would appreciate it. Please go right ahead.

Mr. COOPER. Thank you sir. I mentioned that only if you care to question either Mr. Womble or me at the conclusion of my testimony, we would be happy to ansewer those questions. I also later have a brief series of slides which I would like to show you. So, we will get into those quickly.

I am executive director of the Virginia Surface Mining and Reclamation Association. We represent 115 coal surface mining companies and suppliers which produce over 80 percent of Virginia's surface-mined coal.

It is our considered opinion that the bill being considered here today would, if passed into law, prove to be a death sentence for an industry already reeling under unreasonable laws and unwarranted attacks. This situation results from a concerted effort by certain members of the news media and several individuals and groups those apparent purpose is to destroy our industry in the name of saving the environment. Time and time again, we find that there is an inverse relationship between knowledge of coal surface mining and the fervor with which it is attacked.

We also find that, in most cases, those who would destroy us have seldom, if ever, actually seen a surface mine, nor have they bothered to talk with those who live and work in mining communities. These pressures, combined with the surface mining industry's apparent blind faith that it would be treated fairly by the Nation's lawmaking bodies, have resulted in a very serious situation.

Our purposes are the training of our members in working to achieve better reclamation of this State and to conduct various research programs which our members voluntarily fund.

Mr. Chairman, at the conclusion of my testimony, I would like to give the report of several items of data such as the kind of handbooks that we publish to guide our members in the reclamation work and such as documents which cover the basic aspects of the industry and the State and what is being done, summaries of a present Virginia law, and then some facts about our industry.

Senator HANSEN. May I say we would be very happy indeed to have you leave all of those materials that you may have with you for reference. They will be kept with this hearing record and I would hope that they might be made available to the members of the committee, and staff, as they want to learn more about what you say.

Mr. COOPER. Thank you, sir. We will make any data or information available which we have access to. I must digress just a moment and say that I feel obligated to make one comment on Mr. Hart's movie. This movie reminds me of several—I have come full circle.

My father was a tobacco sharecropper. I left there and then to New York City, Washington, D.C., and Atlanta, Ga. I voluntarily left the benefits of the big city and moved to southwest Virginia and to the area where surface mining occurs. I would like to say, sir, that I very much agree with many of the points made in that movie. Things are not what some members of the news media and some critics of the industry would have you believe out there. I would like now to move into some other areas.

We have always supported responsible surface-mining legislation, as evidenced by our assistance with passage of Virginia's 1966 and 1972 coal surface-mining acts—the latter having been called a model law by many who have reviewed its provisions. A previous witness said to you that the potential legislation enacted, I don't remember the exact words, but the implication was irresponsible because they have not passed this kind of law this past year. I would submit, gentlemen, that that indicates a shocking lack of knowledge about the present law or a willingness to endure a present law. Because one provision in our Virginia law right now, which our industry proposed, and which was bought by the legislature, is called a selective mining sites provision that gives the Department of Conservation and Economic Development in the State of Virginia full authority to delete any area whatsoever for any purpose whatsoever from a mining permit application, if it is felt by the department that that area cannot be satisfactorily mined and reclaimed.

We have the most stringent provisions in the Nation for currency of reclamation. We have a limit of 350 feet behind auguring operations for reclamation. We have a limit of 700 feet behind these operations for open surface mining. We have many other provisions, which you can see for yourself. I was somewhat appalled at the statement that Virginia's law is weak and the legislature did not do something responsible for the passing of even a stiffer law.

I live in the area where some of your previous witnesses claim to have traveled extensively and I would like at some future time an opportunity to answer questions about some of the testimony about those areas. I didn't learn about the area by reading the newspapers

and flying overhead. I learned about it by living there. I think the testimony here is testimony which we can document and back up for you.

Senator HANSEN. Let me interrupt you at this point, to say that we will welcome such observations as you may care to make. The chairman has indicated that this hearing record will be kept open for 10 days and I know that we would all be very much interested.

Mr. COOPER. I would very much like, sir to address several specific statements which, in my opinion, are not adequate. The purpose of a statement is not to harangue those things over, but to talk about specifically Senate bill 425. We are not addressing the administration bill because we feel that our comments do apply to similar provisions in the bill and we can save us all some time by working just with 425.

Under section 203, we feel that the exclusions of several of the industries that are rather questionable because surface mining in this Nation represents approximately one three-hundredths of the total earth's disturbances. I will show you some slides in a few moments that will illustrate why we quesion the provision.

Section 206 establishes a moratorium which, in the State of Virginia at least, certainly is not necessary because many of the businesses would be closed down, and many of our people would be unemployed. All decisions were made about whether that law was working properly or was stringent enough. I say right here gentlemen, that it is stringent enough to cover our situation in Virginia.

Coal is also singled out in section 207 for earlier compliance and our other minerals, if we read it correctly. We feel that there should be a discrimination against our industry, compared to the others.

Section 208: Permit application procedures and the requirements which really have no logical bearing on the stated goals of this bill—for example, the listing of data required by 208(a)(1) and (2) could require months to assemble and would serve no useful purpose, since it constitutes at least a partial duplication of data required by existing State and Federal laws.

We will give you detailed information on those if you require it.

Section 209: The permit approval procedures contained in this section place excessively broad powers in the hands of the Secretary, and they invite harrassment by persons and groups having no valid interest in the mining operations. In fact, we have been told by representatives of two large environmental groups that, as a matter of practice, they will oppose every permit application. And the bonding requirements of this section will also force many small companies out of business.

Section 210: Subsection (d) provides for still another possible hearing for obtaining bond release. Surely, the cognizant agency would be more competent than the general public to judge whether adequate reclamation had been accomplished. This provision should, therefore, be deleted.

Section 212: Numerous minimum standards proposed for mining operations and reclamation are totally unrealistic. While purporting to deal with mining and reclamation, this section is, in fact, a land use provision. It provides for Federal intervention in an area which should be handled by the States and affected individuals. Other legislation presently being considered or already in existence covers this

subject more than adequately. Assurances would be required that numerous other laws and regulations were being complied with—an obvious and unnecessary duplication. In addition, several specific requirements demand results and a level of perfection not found even in nature.

I had a very interesting experience this morning. I heard a wife say earlier this morning—my backyard has never been surface mined—she said, "Honey, we had a tremendous slide which came down the mountain into our backyard." This is virgin land, gentlemen, it has never been surface mined and the slope is approximately 27° going up the hill from my backyard.

The average slope in the State of Virginia is 23½° and it goes from a low of approximately 19° to a high of approximately 29°. In the southern coal-producing counties, humus demands are made in the bill to maintain the quality of water.

For example, maintaining the quality of water, at best an unclear requirement; avoiding acid mine drainage, when acid drainage occurs frequently in completely undisturbed areas; preventing immediate and permanent erosion, when, in fact, erosion to some degree is always present in any soil; assuring that all remaining slopes of highwalls and spoil will be permanently stable, again, a condition not even achieved by nature. Finally, subsection (c) of 212 vests in the Secretary absolute authority to determine whether, in effect, certain companies could continue in business. We feel this needs far greater study before being seriously considered.

Title III: This entire title is an area of major concern to us. The subject of so-called orphan or abandoned lands, that is, those mined before reclamation laws were passed and, therefore left unreclaimed—has been grossly misrepresented. There are several basic facts which we believe must be considered by you in making your recommendations. We refer specifically to the following:

(1) With very few exceptions, no new lands of this type are being created. And I understand that this is the case in most States. Existing State laws assure that each acre disturbed will also be reclaimed. In previous testimony, you have been told otherwise. Those statements are at odds with what a careful review of State surface mining laws will reveal.

(2) Approximately three-fourths of existing orphan lands were mined by operators no longer in business. The often-repeated charge that surface mining companies now operating are somehow responsible for these lands is false.

(3) Detailed surveys in Virginia show that between 75 percent and 80 percent of these lands in Virginia will be mined again and will therefore be reclaimed under existing reclamation laws. To invest millions in reclamation and then have the areas redisturbed would be an incredible waste of resources.

(4) Careful surveys of over 5,000 acres of orphan land in Virginia indicate that no more than 5 percent to 10 percent of these areas require any work whatsoever to correct problems of environmental degradation. And this is all under the abandoned lands provision of the bill, sir. Not more than 5 to 10 percent of these areas require any work whatsoever because of environmental degradation. We spent days

"tromping" through these areas and I can show you pictures, very briefly, to give you and idea of what they look like.

(5) Most orphan lands in Virginia have satisfactorily stabilized themselves, and so-called reclamation would only serve to redisturb the land and cause at least some additional—and unnecessary—environmental problems.

(6) Finally, and most important on the subject of orphan lands, this bill would implement a fantastically expensive program to precisely duplicate what should be accomplished under existing State laws—and would do so before even the most basic studies have been accomplished to determine whether a real need exists. A review will show that every State has laws which prohibit a citizen from allowing his property to become a nuisance or a danger to his neighbor.

And these laws certainly cover the situation in which one allows acid or siltation or slides from his land to threaten or harm his neighbor or his neighbor's property. These lands are usually owned by individuals. We believe that both the rewards and the responsibilities of owning land should accrue to the owner—not to the Federal Government or to the surface mining industry. A far better answer to this problem—if, in fact, it is a problem—would be to enforce present laws rather than to pass still more laws which would contribute nothing but expensive duplication of effort.

These are our major concerns with S. 425. At this time, I would like to show you a few color slides which will vividly illustrate why we feel that this bill, in its present form, would work a grave hardship upon the coal surface mining industry in the mountainous Appalachian States. These pictures were made in Virginia, but I believe that they are typical of the situation which also exists in neighboring States.

First, I would like to show you pictures of several orphan landsites in Virginia. These areas are typical of those in several Appalachian States. No reclamation has been accomplished on these areas. You may judge for yourselves whether reclamation is necessary, or even desirable.

I would like for you to notice what has happened to the high rolls which is left. I would like for you to notice what has happened on the bench. [Slide.]

These are the areas which, in Virginia, were included under this law that became law. These are the areas under which millions of dollars would be put to reclaim them. And to redisturb areas which by any reasonable measure which, we feel, are satisfactorily restabilizing themselves, esthetically, we might not like the way they look, but I submit that esthetics might make a poor basis for investing millions of dollars in those areas.

I mentioned the area of exclusion in the bill. I would like to show you some things. The mountainous Appalachian region in southwest Virginia which is not covered by this bill and we wonder if maybe it should be, this is road construction. As you can see on the mountains of that area, you can't do anything in the way of building or constructing without going in the side of a mountain. This lump construction is road construction again. Now, if we did that in southwest Virginia, and nothing covers that. If we did this on a mountainside in Southwest

But the highways can be built into the area and this doesn't happen. If we did this to a hillside and left it for a period of time and this man started building his house, we would either be in jail or closed down. But nothing covers that. If we did this on a mountainside in southwest Virginia and left it exposed for months because of weather, we would get an emergency order and under Virginia law, we would be shut down, and the bond would be forfeited.

This was done on Highway 460 near Richlands, Va., and this is referred to by the local press as an engineering marvel. We create highwalls one-fourth this high and they are called environmental disasters. Now the fault you see running across that cut has already started coming down that mountain. It is going to come down on some people. I submit, gentlemen, that there are areas which may need coverage and addition to coal surface mining.

Now, you have heard testimony presented here today that these mountains are devastating, having been told earlier in the week that reclamation does not work. That may be so in some places, but I want to show you what is happening in southwest Virginia.

I purposely brought enough slides so that no one could reasonably charge that we had picked a couple of show places. I think the rest of it is bad.

Now this is what is being done in southwest Virginia. This is the way the area looks before it is mined and we don't have any flatland out there. This is how it looks during mining operations and it is ugly, I know that. This is how it looks before the seeding and revegetation are accomplished, but after regrading has been done.

You are looking at lands along which have a fair market value of $15 to $50 an acre maximum. It cannot be used for anything in its virgin state, except scrub timber.

This picture is very typical, as you can see in the upper right. The hillside there is some 45°. Now, you can't graze cattle on that. The timber which grows there is scrub. Yet, you have 6.27 inches of topsoil on the average but the timber will not bring harvesting cost at market. But after it has been mined and reclaimed, there is a 150-foot wide flat area which is usable for a lot of things and I will show you some of those.

This is another illustration of the original slope which is going something like this, which by your estimate was somewhere in the range of 27°. When you see what has been done, there is some usable land.

These are just other areas that have been reclaimed. This is a very valuable farm now which has been made on the hillside, where it could not have existed. These people apparently were not too worried about the slides and what have you that have been talked about earlier. This is a very, very pretty area now, near Norton, Va., which was seeded in May 1972 and this picture was made in October of 1972.

This is an orchard. This is a very interesting area behind Clinch Valley College in Norton, Va. A tremendous protest went up before this area was mined and the college community said that the area would be devastated forever. The operator was granted the right to mine the area. He went in and mined it and a very interesting thing happened.

The chancellor of Clinch Valley College came to me and asked me for our association to donate money to the college so that they could buy it for college expansion after they had opposed its mining.

Interestingly enough, we gave them the money. This is another area that is now a pasture near Wise, Va. You can see what was there in the background before. This is just another field. This is the Wise County, Va., fairgrounds and it certainly could not have been put on a virgin hillside.

This is a tree farm. This is the Grundy, Va., airport which could not have been put in. There was no road for it until the area was surface mined.

This is an area near Tom's Brook, Va. This is in Esserville, Va. This is the Wise County industrial site which could not have been put there without the area having first been surface mined. This is in the process of being cleared away and regarded for the industrial site at this time.

We have landed new industries, and we didn't land them by killing industry and destroying the tax base that we had before. We landed it by putting in an industrial development site.

This is another area of surface mining.

This is cattle farming. It is becoming a very interesting thing in southwest Virginia because it is going to be big business, and they want the grazing on the hillsides.

This is another surface mine. Still another one over in Lee County, Va. Another farm that was once a surface mine.

This is a very interesting building. It is the Norton, Va., elementary school, and you gentlemen, some of you, were told in testimony last year that it cost $8,000 an acre to reclaim that area which was once an orphan land, and I must tell you this, because it has been bandied about all over the place. I got interested in that because I am an engineer by training, and I didn't believe that that much money could go into this.

So, I began looking at it, and I had an interview with Mr. John Litton, who is the chairman of the Norton, Va., school board, and my children attend this school, by the way. Mr. Litton said, "Yes, it did cost $8,000 an acre, but there is something else you should know: that included excavation of 60,000 yards of dirt for the school foundation. It included the teachers' parking lot. It included the access highway. It included over 1,300 feet of expensive concrete drainage systems, and the fact is," he said, "that we saved over $2,000 an acre because the area had been surface mined and leveled, although it was not reclaimed."

You gentlemen were told last year that it cost $8,000 an acre, but I guess they forgot to tell you the rest of it when they covered that situation.

This is another farm on the surface mining in southwest Virginia. This is a bowling alley in Wise County, which is on an old surface mine that has been reclaimed. Another area here, Norton, Va.

Gentlemen, we can't afford this many demonstration projects. This is in Esserville, Va. This is a housing development near Wise, Va., which was a surface mine. You have been told that you can't build anything stable on these areas. That is true if you build it out on the slope.

If you build it on the bench area and use some intelligent judgment when you are building it, and don't put it on the disturbed soil, you can certainly have a flat area to build on. These people have put houses on there which range in value from $26,000 to $45,000.

A slope of some 45°, which is well stabilized. All of them don't look like this, but you have seen those, and these are the other ones.

More cattle on a different area near Clintwood, Va. This is near Pound, Va. This is in Lee County, Va., where an entire mountaintop is taken off and people say, "Look what they are doing, they are cutting off the mountaintops."

Well, I say, look what they did after they cut it off.

Gentlemen, my time is up, I believe. I will be very happy at this time to answer any questions you might have about our testimony, and I am sure Mr. Womple would also. I also have with me a gentleman who is a coal operator from Dickenson County, Va., and I am sure that if anything comes up of an operational nature he could probably answer it for you.

[The complete statement of Mr. Cooper follows:]

VIRGINIA SURFACE MINING & RECLAMATION ASSOCIATION, INC.

PROGRESS BUILDING PHONE 703-679-2849 NORTON, VIRGINIA 24273

STATEMENT

OF

B. V. Cooper

EXECUTIVE DIRECTOR,
VIRGINIA SURFACE MINING &
RECLAMATION ASSOCIATION
NORTON, VIRGINIA

BEFORE THE
SENATE COMMITTEE ON
INTERIOR AND INSULAR AFFAIRS
16 MARCH 1973

93-213 O - 73 - pt. 2 -- 33

Mr. Chairman, Members of the Committee, I am B. V. Cooper, Executive Director of the Virginia Surface Mining & Reclamation Association. Our Association represents 115 coal surface mining companies and suppliers which produce over 80% of Virginia's surface-mined coal.

It is our considered opinion that the bill being considered here today would, if passed into law, prove to be a death sentence for an industry already reeling under unreasonable laws and unwarranted attacks. This situation results from a concerted effort by certain members of the news media and several individuals and groups whose apparent purpose is to destroy our industry in the name of saving the environment. Time and time again, we find that there is an inverse relationship between knowledge of coal surface mining and the fervor with which it is attacked. We also find that, in most cases, those who would destroy us have seldom, if ever, actually seen a surface mine, nor have they bothered to talk with those who live and work in mining communities. These pressures, combined with the surface mining industry's apparent blind faith that it would be treated fairly by the nation's law-making bodies, have resulted in a very serious situtation.

It is with this background that we respectfully urge that you carefully consider the qualifications--and motives--of those who would sacrifice the livlihoods of 24,000 Virginians; who would force the nation into an even greater dependence on foreign oil; who would impose on our industry the expense and inefficiency of still another layer of governmental control; and who would not be around to help cope with the resulting chaos.

We have always supported reasonable surface mining legislation, as evidenced by our assistance with passage of Virginia's 1966 and 1972 Coal Surface Mining Acts--the latter having been called " a model law" by many who have reviewed its provisions. But we strongly oppose several provisions of Senate Bill 425. The following are general areas of concern, and we will be pleased to meet with your staff to discuss details.

SECTION 203: Surface mining operations in this nation account for approximately three-tenths of one percent of toal earth disturbances. That is, three hundred and thirty three times as much area is disturbed by such socially acceptable activities as shopping center construction, road building, farming, home construction, logging, etc., as is disturbed by surface mining. So we question this provision which exempts many far more devastating industries while holding the surface mining industry accountable for its relatively limited activities.

SECTION 206: The moratorium established by this Section appears to ignore the fact that several states--including Virginia--have stringent laws which make such a moratorium unnecessary. Hundreds of mining companies would be forced into bankruptcy and thousands would be unemployed while we waited for Federal approval of our state plans. This provision should be deleted.

SECTION 207: In dealing with permits, coal is singled out for earlier compliance than are non-coal operations. We feel that coal and other minerals should be given the same consideration.

SECTION 208: The permit application procedures would require numerous items of information which have no logical bearing on the stated goals of this bill--for example, the listing of data required by 208.(a)(1) & (2) could require months to assemble and would serve no useful purpose, since it constitutes at least a partial duplication of data required by existing state and federal laws.

SECTION 209: The permit approval procedures contained in this section place excessively broad powers in the hands of the Secretary, and they invite harrassment by persons and groups having no valid interest in the mining operations. In fact, we have been told by representatives of two large environmental groups that, as a matter of practice, they will oppose every permit application. And the bonding requirements of this section will also force many small companies out of business.

SECTION 210: Subsection (d) provides for still another possible hearing for obtaining bond release. Surely, the cognizant agency would be more competent than the general public to judge whether adequate reclamation had been accomplished. This provision should, therefore, be deleted.

SECTION 212: Numerous "minimum" standards proposed for mining operations and reclamation are totally unrealistic. While purporting to deal with mining and reclamation, this section is, in fact, a land use provison. It provides for federal intervention in an area which should be handled by the states and affected individuals. Other legislation presently

being considered or already in existence covers this subject more than adequately. Assurances would be required that numerous other laws and regulations were being complied with--an obvious and unnecessary duplication. In addition, several specific requirements demand results and a level of perfection not found even in nature.

For example, "maintaining the quality of water": at best, an unclear requirement; "avoiding acid mine drainage", when acid drainage occurs frequently in completely undisturbed areas; "Preventing immediate and permanent erosion", when, in fact, erosion to some degree is always present on any soil; assuring that "all remaining slopes of highwalls and spoil will be permanently stable", again, a condition not even achieved by nature. Finally, subsection (c) of 212 vests in the Secretary absolute authority to determine whether, in effect, certain companies could continue in business. We feel this needs far greater study before being seriously considered.

TITLE III-This entire Title is an area of major concern to us. The subject of so-called "Orphan" or "Abandoned" lands--that is, those mined before reclamation laws were passed and, therefore, left unreclaimed--has been grossly misrepresented. There are several basic facts which we believe must be considered by you in making your recommendations. We refer specifically to the following:

(1) With very few exceptions, no new lands of this type are being created. Existing state laws assure that each acre distrubed will also be reclaimed. In previous testimony, you have been told otherwise. Those statements are at odds with what a careful review of state surface mining laws will reveal.

(2) Approximately three-forths of existing orphan lands were mined by operators no longer in business. The often-repeated charge that surface mining companies now operating are somehow responsible for these lands is false.

(3) Detailed surveys in Virginia show that between 75% and 80% of these lands in Virginia will be mined again and will therefore be reclaimed under existing reclamation laws. To invest millions in reclamation and then have the areas redisturbed would be an incredible waste of resources.

(4) Careful surveys of over 5,000 acres of orphan land in Virginia indicate that not more than 5% to 10% of these areas require any work whatsoever to correct problems of environmental degradation.

(5) Most orphan lands in Virginia have satisfactorily stabilized themselves, and so-called "reclamation" would only serve to redisturb the land and cause at least some additional--and unnecessary--environmental problems.

(6) Finally, and most important, this bill would implement a fantastically expensive program to precisely duplicate what should be accomplished under existing state laws--and would do so before even the most basic studies have been accomplished to determine whether a real need exists. A review will show that every state has laws which prohibit a citizen from allowing his property to become a nuisance or a danger to his neighbor. And these laws certainly cover the situation in which one allows acid or siltation or slides from his land to threaten or harm his neighbor or his neighbor's property. These lands are usually owned by individuals. We believe that both the rewards and the responsibilities or owning land should accrue to the owner--not to the federal government or to the surface mining industry. A far better answer to this problem--if, in fact, it is a problem--would be to enforce present laws rather than to pass still more laws which would contribute nothing but expensive duplication of effort.

These are our major concerns with S.425. At this time, I would like to show you a few color slides which will vividly illustrate why we feel that this bill, in its present form, would work a grave hardship upon the coal surface mining industry in the mountainous Appalachian states. These pictures were made in Virginia, but I believe they are typical of the situation which also exists in neighboring states

First, I would like to show you pictures of several orphan land sites in Virginia. These areas are typical of those in several Appalachian

states. No reclamation has been accomplished on these areas. You may judge for yourselves whether reclamation is necessary, or even desireable.

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Next, we believe you should see the kinds of environmental disturbances exempted by this bill.

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Finally, these are areas which were mined and reclaimed in Virginia. These are not the exception; they are the rule.

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Our Virginia reclamation law is sound, and it is working. We have our problem areas. But they will not be solved by passage of punitive and unjustified legislative provisions. They will be solved by continuing our past efforts of responsible planning and execution in our mining activities and by working closely with those who sincerely want an intelligent balance between requirements of energy, economics,and our environment. We trust you will assist by recommending only those legislative provisions for which there is a demonstrated need.

VIRGINIA SURFACE MINING & RECLAMATION ASSOCIATION, INC.

PROGRESS BUILDING PHONE 703-679-2849 NORTON, VIRGINIA 24273

SUBJECT: 1972 VIRGINIA SURFACE MINING LAW

On the last day of the 1972 Virginia General Assembly session, a new surface mining law was passed. This law was effective July 1, 1972. The following are the major provisions of this law:

BOND-The old law required a bond of $100 per acre, with a $2,500 minimum for more than five acres. The new law requires a bond of $200 to $1,000 per acre, with a $2,500 minimum for more than five acres.

NON-COMPLIANCE NOTICE-The old law did not provide for such a notice. The new law allows a non-compliance notice to be served, stating conditions to be corrected and the time limit for correction. Failure to comply with the notice can result in the permit being revoked and bond being forfeited.

PERMIT FEES-The old law required a permit fee of $6 per acre with a $150 maximum. There was no renewal fee. The new law requires a $6 per acre with no maximum. A $2 per acre annual renewal fee is now required.

PROSPECTING PERMIT-A prospecting permit was not required under the old law. The new law requires a prospecting permit. This permit can cover no more than 10 acres, must be bonded at $300 per acre, and requires a permit fee of $6 per acre.

EMERGENCY ORDER-The old law did not provide for immediately closing down an unsafe operation or one which threatens to damage property or the environment. The new law provides than an immediate injunction may be obtained to require suspension of such operations.

SELECTIVE MINING SITES-Under the old law, any site could be mined if a valid permit were obtained. Under the new law, the Director may delete from a permit any areas which, in his opinion, will adversely affect surrounding areas or endanger public health or safety.

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FACTS ABOUT COAL SURFACE MINING

IN

SOUTHWEST VIRGINIA

1. Approximately 1500 persons are directly employed by Virginia surface mining companies. These employees provide direct support for an estimated 6,000 people in Southwest Virginia.

2. Approximatley $11 million in direct wages are paid annually to surface mine employees. These wages result in circulation of an estimated $40 million annually in Southwest Virginia's economy.

3. If surface mining were banned in Virginia, numerous retail stores and service industries would also collapse. Mass unemployment would result, and an estimated 25,000 persons throughout the state--including railroad employees and east coast shipping employees--would lose their means of support.

4. Most surface mine employees belong to the same union and, job for job, are paid the same wages as their underground counterparts.

5. When all factors are considered, reliable estimates place the surface mining industry's contribution to Virginia's economy at $125 million annually.

6. Coal-bearing lands are subjected to a quadruple tax burden in Southwest Virginia: a property tax, a mineral rights tax; during the year coal is mined, a so-called "development" tax. (This "development" tax amounts to nearly $100 per acre for the average coal lands); and a severance tax on coal was passed by the 1972 Virginia General Assembly.

7. In addition to the above taxes, the typical Southwest Virginia county also imposes on the coal industry a personal property tax and a tools and equipment tax.

8. Surface-mined coal cannot be obtained through deep mining techniques. This coal is near the surface, and the material above the coal is not strong enough to allow safe removal of the coal.

9. In the 1972 session, Virginia's General Assembly passed what many have called a model coal surface mining law. Without VSMRA's strong support, this law would have had little chance of passing. This law and the implementing regulations have the support of the industry and will assure that reclamation of Virginia's surface mines is among the best in the nation.

10. In Southwest Virginia, where level land is rare, reclaimed surface mines are being used for home sites, orchards, farms, schools, shopping centers, parking lots, and recreation areas.

11. All land which is surface mined in Virginia must be reclaimed in accordance with stringent state laws. If reclamation is not accomplished, the operator forfeits his bond and loses his right to ever conduct mining operations in Virginia again.

12. Land cannot be mined in Virginia unless both the surface owner and the mineral rights owner agree and are compensated by the operator.

Senator FANNIN. Thank you very much, Mr. Cooper. I am sorry that I did not have the opportunity to see all the films and hear your remarks. But I will now call on Senator Hansen.

Senator HANSEN. I think your presentation has been excellent, Mr. Cooper, and I want to thank you particularly for those slides that you have presented.

They point out a concept that is subscribed to by many. When you talk about reclamation, let's look at all of the options and decide what use might best serve all of us. Obviously those slides are very graphic in showing new uses that can be made following a surface mine operation. The land and real estate were not available before.

I won't ask any further questions.

Senator FANNIN. Senator McClure.

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

You indicated in your statement that 75 to 80 percent of the orphan lands will be mined again, is that correct?

Mr. COOPER. Yes, sir. Our survey is based on some 5,000 acres, and indicate that approximately three-fourths of these will be mined again to get additional coal out.

You see, the youngest of the lands, sir, was mined in 1966. All land since then has been required to be reclaimed under Virginia law.

Now, at that time the coal market was down. A lot of these areas were not mined very extensively because the coal market did not support the investment. The market has improved some. There is different machinery now, so those areas will be remined, and of course will have to be reclaimed under Virginia law. But the permit system is such that you cannot go back and open up an old area.

Senator MCCLURE. Two points that I wish to make on it. One is that you are basing that projection on current and expected market values that are foreseeable and predictable now?

Mr. COOPER. Yes, sir. We feel that those are conservative, because we feel the energy demands will at some point in the future probably make that number go up some. This may be years down the road, but we think it may go up some.

Senator MCCLURE. There was one aspect of the administration's proposal that was new and different from last year, and that was the probability that a large percentage of orphan lands could be reclaimed, and the reclamation cost in the present operating practices.

From your standpoint, do you object to the present operator having to reclaim to a higher standard than he finds the land in now? In other words, do we reclaim the orphan lands when he does remine? Is that an acceptable standard as far as you are concerned?

Mr. COOPER. Sir, I am not sure I understand the exact question, but see if this answers it. I feel that certainly good, solid reclamation standards ought to exist, but I do not want to see a situation exist where a man is told as a matter of practice that he must put a land area to a certain use. Who is to say whether a pasture land is a higher use than a forest area?

Senator MCCLURE. That is a little different point from the one I am making. Apparently I didn't make myself clear.

First, mining operators come in and say they don't want to have to improve the property. They don't mind having to put it back in a

reasonable condition, but they don't want to have to make it better than it was before they came in.

Now, obviously, if a present operator is remining an area that was mined before, he is going to have to reclaim it. He is being required to improve it over the condition under which he found it this time.

Mr. COOPER. We don't object to that, sir, because we very strongly fought for a revision of our 1966 reclamation law, and we got a law which sets certain minimum standards for reclamation. It sets vegetation standards, fertilization standards, contour standards, and we do not object to this because we think that when the land is remined, the man who mines it has an obligation to fix it.

We do object to having to go back in to an orphan area which is not being remined and an orphan area which is private property, and for which the owner has total responsibility. We object to that.

Senator MCCLURE. I understand. Now, on page 5 in that section under paragraphs 3 and 4, you remarked or made reference to surveys. I think you said in your oral presentation those surveys were made—"our surveys" I think is the term you used—is that Virginia Surface Mining and Reclamation Association that made those surveys?

Mr. COOPER. Sir, the surveys were made by representatives from three parties, the U.S. Department of Agriculture, Soil and Conservation Service, the Virginia Division of Mined Land Reclamation, which is a demonstrative agency which enforces our law, and representatives of our association, and we purposely attempted to have the Federal and State and industry people in that survey.

Well, it seems that sometimes people don't believe what we say, and we thought we would have some witnesses when the surveys were being done.

Senator MCCLURE. You have handed us in addition to your prepared statement a couple of other attachments, one being facts about coal surface mining in southwest Virginia. Item No. 4 on that says most surface mining employees belong to the same union, and that is somewhat different than some of the other testimony.

Mr. COOPER. I imagine it is; yes, sir.

Senator MCCLURE. Is that uniformly true throughout all of southwest Virginia?

Mr. COOPER. The United Mineworkers represent both surface miners and deep miners, job for job. Those people are paid the same salaries, and when you hear this testimony that says that people who are working on surface mines are paid lower wages, and the costs are lower, that is not accurate, sir.

Senator MCCLURE. On the last page, or the second page of that attachment, item No. 12, the statement is made that land cannot be mined in Virginia unless both the surface owner and the mineral rights owner agree and are compensated by the operator. Has that ever been challenged by the owner of mineral rights as being unjust infringement upon his property rights, the taking of his property without——

Mr. COOPER. They both have to agree, sir. You have been told otherwise, but there is only one State in the Union, to our knowledge, where that is not the case, and that is the State of Kentucky, and this comes up over and over and people do not seem to understand that if you

own the surface and I own the mineral rights that no surface miner in any State in the country except maybe in Kentucky—I don't know about their laws, so I won't talk about it—that land cannot be mined.

You have heard these horror stories, even today, saying that about the only way you can keep somebody from mining your land out there is with a gun. Well, that is not the case. A man made that statement in earlier testimony and said that is the way this one fellow kept them off of his land. If he owns the land, he and the mineral rights owner, if they are not the same, have to agree to it, and I think you will find that that is the case in 49 of the 50 States.

Senator McCLURE. I am not sure they didn't find that to be so, and that is why I am very interested in your statement. Certainly the evidence in Montana was quite different from that, and testimony that we heard last year, and if we can corroborate that statement, I would very much like to have an attachment or a statement submitted to us.

Mr. COOPER. All right, sir. This is based on the best information I can give. It is my information that the only broad form deed State in the Nation is Kentucky. But some things after a while you just believe as being true, and this I believe, because I think they are the only State.

Senator McCLURE. It certainly is a striking variance from most of the testimony we have had, if it is true. I am not accusing you of any false or bad faith here. It is just that it is a viewpoint that hasn't been expressed, and I am very interested, and I would like to know, indeed.

Thank you very much. I have no further questions.

Senator FANNIN. Thank you.

Mr. Cooper, I did see part of the film and I heard your remarks. I am very much impressed. It seems like you are talking about a different West Virginia than what we have heard about from some of the witnesses.

Mr. COOPER. Virginia, sir, not West Virginia.

Senator FANNIN. All right, Virginia. So much of our information has been about West Virginia, but we are very pleased to have this information.

I am sorry that I was called away, however I will read your testimony. I am wondering, do you have a program similar to what Mr. Wilkinson talked about? Did you hear Mr. Wilkinson?

Mr. COOPER. Yes; I heard it. We do not have as extensive a program. Our association has only been in existence for a year and a half. We are working on this. We just agreed to fund two research programs, a couple of pilot orphan-land programs, but we do not have an extensive a program as they have.

Senator FANNIN. Given the opportunity, you will go forward. Do you have a goal of going forward in the program similar to that which Mr. Wilkinson explained is taking place in West Virginia?

Mr. COOPER. The same end results. The techniques may be different, sir.

Senator FANNIN. Sure. I understand. I commend you again, and we will read your statement. It has been very helpful that you did cover subjects that are very important to us.

Did the other gentleman have anything?

Mr. WOMBLE. I just would like to say that we both appreciate the opportunity to appear before you, and the highlight of Mr. Cooper's

presentation is that those of us who are operating in Virginia and the other States, West Virginia, Kentucky, Tennessee, that we do have reclamation laws.

I am not as familiar with the other States as I am with Virginia, but I do feel that the laws we have in Virginia are adequate, and that we are doing very good reclamation and revegetative work.

Senator FANNIN. Thank you kindly. We really appreciate your testimony.

Is there anything further that you would like to present to the committee? The record will be held open for 10 days.

Mr. COOPER. Thank you, Mr. Chairman. If any of you gentlemen do have an opportunity, we would like to invite you to come out and see us. It is our understanding that this committee has not had a chance to tour southwest Virginia yet. We think you would find it interesting, and invite you to come, if you can, as our guest.

Senator FANNIN. Thank you very much.

The next witness will be Paul Patton, of Virgie, Ky. If you would, come forward.

Mr. Patton, perhaps you explain in your statement, but I would just ask you the location of Virgie, Ky.?

Mr. PATTON. The extreme eastern tip of Kentucky, near Pikesville, in Pike County.

Senator FANNIN. Thank you.

Mr. PATTON. Before I start, let me say that I share Mr. Cooper's impression that Kentucky is the only State that has a broad form, that still recognizes a broad form deed. There may be some other ways of getting around it; but as I understand the case in Virginia, at times it can cost more to get the surface rights to the land than it does to get the mineral rights to the coal. I add that as a point of information. That again is my impression. That is not based on any hard knowledge.

Senator FANNIN. Mr. Patton, your complete statement will be made a part of the record, and you may proceed just as you so desire. Please proceed to testify with the knowledge that your complete statement will be made a part of the record.

STATEMENT OF PAUL PATTON, PRESIDENT, KENTUCKY ELKHORN COALS, INC., AND SECRETARY, YANKEE CLIPPER MINING CO., OF LOUISA, KY.

Mr. PATTON. I am Paul Patton, a graduate of the University of Kentucky with a B.S. in mechanical engineering. Since 1959, I have been associated with several companies operating both deep and surface mines in eastern Kentucky. At present, I am president of Kentucky Elkhorn Coals, Inc., of Virgie, Ky., and secretary of Yankee Clipper Mining Co., of Louisa, Ky. Both of these companies operate surface mines that combined produce approximately 800 tons a day and employ about 18 men. I am also secretary of the National Independent Coal Operators Association, vice president of the Kentucky Surface Mines Reclamation Association, and I appear here today on behalf of both those organizations.

May I say that I want to address my remarks primarily to the possibility of some degree of limitation being included in the law. Even though I realize that both bills under consideration, at this time, do not

have this limitation. I think that it is very possible that it could be introduced later or a bill coming from the House could contain this limitation. And I think the Senate needs certain information, and so that will be my main emphasis today.

It is the responsibility of the coal industry to provide the country with energy at the lowest possible cost consistent with safety and the protection of the environment. The industry has fulfilled this responsibility admirably, providing coal in 1968 at a substantial lower cost than in 1948 in the face of rising costs in every area, and still obtaining a tremendous increase in safety for its employees. The industry now realizes, as does the rest of the Nation, that lowest possible cost is not the only factor to be considered when measuring the value of a service or product. We must consider the effect on the quality life of our citizens. We realize that past practices of industry, including the coal industry, have resulted in detrimental environmental changes and concur that legislative action is necessary to assure that proper importance is placed on the environmental impact of our industry.

Many States have already enacted laws dealing with this problem. In some instances, such as my home State of Kentucky, they are adequate. In others, these laws are weak or nonexistent.

It is the responsibility of Congress to pass a law which will reasonably protect the environment and still allow the coal industry to produce cheap coal. Care must be taken to avoid punitive and repressive legislation that has no appreciable effect on the problem but would add unnecessary cost to coal. An example of that is some portions of the Federal Coal Mine Health and Safety Act of 1969.

Surface mined coal is absolutely necessary if this country is to have the energy it needs. In most cases, we are recovering a valuable resource that can be obtained in no other way and surface mining is by far the safest way to mine coal.

We have all become more conscious in recent years of coal mine safety. In Kentucky, during the years of 1965 through 1970, unfortunately we averaged 1 fatality for each 1.2 million tons of coal mined from underground mines. During the same period, we averaged 1 fatality for every 11.2 million tons surfaced mined. Surface mining was 10 times safer than underground mining.

If we had produced the 60 million tons of surface-mined coal in 1970 from underground mines, we could have expected to have had 44 more Kentuckians killed. Therefore, most responsible people in my State have concluded that we cannot abolish surface mining but we can control it.

I advocate Federal legislation that would set minimum standards of reclamation but would allow the State the opportunity to accept primary responsibility for enforcement. There are several reasons for this approach, some of which are as follows.

One, uniform minimum standards would prevent one State from lowering requirements to obtain a competitive advantage over others.

Two, it would assure the public of protection over the entire Nation, even those States where this problem is not so large as to merit State legislation.

Three, it would place the power and resources of the Federal Government in a position to help solve some of the problems created by surface mining.

At the same time, care must be taken to prevent the same uniform standard from being applied to all segments of the mining industry or all sections of the country where conditions, terrain, climate, vegetation, cover, and products vary. This can best be done by the several States who already have expertise in the conditions that exist in their State and how to cope with them.

The States will also be less likely to take a punitive attitude toward the industry. An example is the recently enacted Federal Coal Mine Health and Safety Act of 1969. We are faced with a situation where the Federal inspectors are taking a completely inflexible attitude toward enforcement of the law. The fact that an operator has a very safe mine and is obviously doing a good job has no bearing on the thinking of an inspector. The mine may be perfectly timbered and the equipment may be maintained in excellent condition, but if an inspector finds a minor violation such as a line curtain that is 15 feet from the face instead of the 10 feet required by the law, he will act as though you are about to get 10 men killed and will probably close the mine, resulting in considerable expense to the operator when the violation could have been corrected in 5 minutes.

A similar situation could result very easily in a surface mine where an operator is doing an excellent job in controlling water and erosion, has a good vegetation growing and is doing a fine job of regrading, but he is allowed a bench width of only 120 feet and the inspector measures it as 125 feet.

A Federal inspector would most likely apply the maximum penalty, which I would assume would be revoking the permit for a certain number of days instead of recognizing that the operator had done a good job of preventing those abuses of the environment that the law was intended to prevent.

In other words, the operator had violated the letter of the law but not the spirit of the law. The situation that exists today in underground mines is that the inspectors are concerned only primarily with compliance with the law and are subconsciously losing sight of their prime function—that is, to see that the mines are safe.

Many other Federal programs rely on Federal and State cooperation to achieve the maximum benefit for the people at the lowest cost. Good examples are the interstate highway program and the Federal school lunch program. It should go without saying that the States could operate the program much cheaper than the Federal Government.

Implementation of the program would also be much faster and smoother as well as less disruptive to the Nation's energy supply because most States where mining presents a real problem already have an organization with trained personnel and facilities.

Surface mining is temporarily harmful to the environment but with proper care, the permanent damage can be minimal.

In contour stripping for coal in eastern Kentucky, the results can sometimes produce more valuable land than the undisturbed mountain. The primary permanent damage is to the aesthetic value of the scenery and I admit, in flying over our mountains it does at times present a most unpleasant view but when traveling by highway, as most tourists do, the sights are seldom seen. The mountain behind my house was surface mined many years ago and I think it is more valuable now than before the coal was mined for the following reasons.

First, the trees have grown up and almost cover the rock highwall that was left so that it is completely invisible from the road, even in the winter.

Second, I now have a road that makes most of my property accessible and I can take my son hunting very easily because game is more plentiful on the bench than in general forested areas. Experts from the Kentucky Department of Wildlife have told me that this is due to the "edge effect" of small trees, brush and briars that exist at the foot of the "out slope" which afford small game such as rabbit, quail, and grouse more food, shelter, and protection than open forest, as well as the occasional pools of water left by the mining operation.

Generally, water is only available at the foot of the mountain which could be several thousand feet and would probably be a populated area where game would not be safe. Deer also find the grass that grows on the bench and out slope valuable food especially in the winter.

The road may also make it commercially feasible to remove the timber which on an ordinary mountain is not possible with today's modern logging equipment.

The rock highwall also provides protection against forest fires in that it presents a natural fire break that makes control easier. This situation presented itself on my property several years ago enabling me and two men to extinguish a forest fire that otherwise might have endangered my house and would have destroyed more timber than was destroyed by the mining process.

There are occasional abuses in Kentucky that can be cited and might give the impression that our laws are not adequate but I contend that these are the exceptions rather than the rule.

We can cite many more examples of good responsible reclamation than can be found of abuses in mining that has been done since our relatively stringent law was passed in 1966. Much of our problem results in misinformation which is supplied to the public by the news media who are more interested in presenting a sensational view of an isolated incident than they are in presenting an unbiased picture of the situation as it actually exists because sensationalism sells newspapers.

Many times people form opinions based on a picture or view of an active strip mine site or a strip mine where the work was done prior to the enactment of adequate State laws. When I talk to people, I ask them to wait until the land has been reclaimed and the bond has been released before they judge a mine site.

This generally takes 2 years in Kentucky, but may require more time if the operator does not do a good job or has particularly difficult conditions. An example is a letter written to the Big Sandy News in Louisa, Ky., by Mr. Tom Wallace, that roundly condemns strip mining in Lawrence County, Ky. But, when Mr. Wallace actually saw one of the strip mines, he wrote a second letter stating that, in his opinion, the land was more valuable than it had been prior to surface mining, and that he could not see where much permanent damage had been done.

These letters are attached to this statement in full, as was Mr. Wallace's request, and which I believe are self-explanatory and very interesting.

I would like to take a minute to read a few excerpts from both letters to give you an idea of this man's prose, and he was a very articulate—may I read:

I recently drove down through some of this barren landscape. Well, at least we don't have to travel to the Moon to see what pristine desolation is like. We have our own. In many cases right in front of our front doors. Our own abomination of desolation and valley of dry bones.

This graveyard scenery, this stark land, this doomsday landscape expanding all around us gives a good case of a country cursed by its mineral wealth. These stripminers are laying bare the foundations of the world, the roots of the mountains, the bare bones of our living, and no skeleton can live without its covering of flesh. The nude and denuded mudsills we see exposed throughout Appalachia were intended to, and once did, underpin a green and golden land instead of cradling as it now does, in its dead arms the overturned, plowed-up, convulsed, and dead shape of a dead countryside.

This letter continues for about 6 pages with that type of rhetoric. The man was very opposed to strip mining. Just reviewing the strip mining, this is the letter he wrote, the second letter:

About twenty acres of the 70 or so acre farm was involved in the strip-mining operation and most of the mining had been completed. The area mined was about two-thirds up a rather rough hill which was too steep for cultivation and had been covered with a poor stand of second growth timber.

Mr. Estep seemed very pleased with the trade he had made. He had received approximately $10,000 for his coal. His farm had gained twenty acres of level land ready to be sowed in grass. You may subtract from this twenty acres the area covered by two fish ponds one of which was beginning to fill with clear water. Having a long acquaintance with mineral-starved hillside land—I grew up on it. I must say that with the fertilizer being used this area constituted a much better agricultural property than it was before the mining began.

The highwall which was left seemed as respectable and almost as scenic as much of the cliff land in eastern Kentucky. The spoil bank, not much different, it appeared, from the original contour, was to be planted in trees. The seams of coal, too deep for further stripping, left at the foot of the highwall, was being covered with a heavy bank of dirt, to check acid seep from the coal. As I say, this little tour was a revelation to me. It shows what can be done.

This is a man whose information was not complete. This demonstrates that reasonable people, when fully informed, conclude that control rather than abolition is the best approach.

Mr. Kay Estep, mentioned in Mr. Wallace's letter, was asked to allow his farm in Lawrence County, Ky., to be surface mined. He was very reluctant because of the adverse publicity even though he had not seen a strip mine. His neighbors flatly refused.

When told of the money he would probably realize, he reluctantly agreed. He had paid approximately $2,400 for the farm several years ago and has so far received over $9,500 in royalties. In addition, he now has about 19 acres of level land which next year will have a good stand of grass that could be grazed or used for house-site development. He also has a very good road to this property as well as two fish ponds that he can use for pleasure fishing or possibly for commercial fishing. Needless to say, Mr. Estep is very pleased and his neighbors are arguing over whose property the operator should strip next.

In many instances, the people in our area who get most upset are not those people whose land has been mined, but rather those who were disappointed that they had no land to lease so they could realize some of the economic benefits that accrue from surface mining.

I have with me some photographs of the mine site near Louisa, showing what can be done in the way of reclamation of contour strip mining in mountainous terrain. I do not suggest that these pictures are representative of all reclaimed strip mines, but they are representative of this entire mine and that shows clearly what can be done when a company commits itself to effective reclamation as a primary goal.

This is not a large company reclaiming a small showcase area but a very small company effectively reclaiming its entire working area. I recognize that there are a lot of abuses in strip mining, caused primarily by the tremendous economic and political power that coal companies can have in their localities.

Federal guidance can effectively negate this influence. The primary point that I would like to make is that if one small company can do an effective job, and there are many more companies that are doing as well or better, then all companies can do a good job. If it is possible to do good reclamation in mountain terrain, and I believe I can show you that it is, then what we need is reasonable regulation, and effective enforcement.

I am from eastern Kentucky, the area most likely to be severely affected by the passage of any legislation which would place a restriction on the degree of slope where mining could be performed.

This area is one of the most economically disadvantaged areas in the Nation. The following are some of the effects of surface mining in eastern Kentucky based on the year 1971.

Surface mining in eastern Kentucky:

One, annually provides full- and part-time employment in coal production and processing for approximately 6,900 persons, excluding persons employed in the transportation of coal.

Two, directly generates approximately $27.8 million annually in wages and benefits paid to employees.

Three, annually provides full-time employment for another 2,800 persons in the transportation of coal by truck, railroads, and barges.

Four, annually provides full-time employment for approximately 950 persons employed by firms which service and supply the eastern Kentucky surface mine industry.

Five, indirectly generates annual full-time employment for approximately 1,700 other residents of the eastern Kentucky coalfields.

Six, directly and indirectly generates full-time annual wages within its State totaling approximately $54 million.

Seven, pays approximately $11.6 million annually in State and local taxes excluding State corporate income taxes.

Eight, pays approximately $68.8 million annually for materials and services.

Nine, has $145.6 million invested at replacement cost in facilities and equipment, excluding coal reserves.

Ten, accounts for most of the coal mined in 21 of eastern Kentucky's 31 coal producing counties and more than 50 percent of coal-industry employment in 17 of these 31 counties.

Eleven, annually produces more than 34.5 million tons of coal, having an f.o.b. mine value of approximately $207 million.

This, gentlemen, represents almost half of our economy. This, in an area that has known only stagnation and decline for 24 years. But our economy is beginning to grow, and to provide us with more and better

jobs. We are only now getting the nice motels, shopping centers, and other business establishments that are the signs of a robust economy.

May I say that the film that Mr. Hart showed did demonstrate that we are not as different as most of the people in the west of this country seem to think we are.

The niceties of life that the rest of the country has taken for granted, are only now becoming available to us.

A great deal of this expansion has been the result of increased surface mining, largely by locally owned companies, in the last few years.

Coal is the economy of eastern Kentucky and surface-mined coal is almost half of our production. Any legislation eliminating or significantly reducing this type mining may not significantly affect the Nation as a whole, but it will be devastating to us.

It will push us back to the dark days of the 1950's and early 1960's when proud men could not feed their families. When young people had to go north to a different and hostile society to find work.

And do not be misled by the theory that men displaced from surface mining would be reemployed in underground mines. Underground mining is a completely different occupation requiring completely different skills. If a bulldozer operator working on a highway loses his job, he would never consider a job in an underground coal mine because he does not have the skill and he is not accustomed to the different working environment.

A bulldozer operator in a strip mine will be identical. My personal opinion is that less than 10 percent of the men now working in the surface mine industry would accept a similar paying job in an underground coal mine if it were available.

To us, the people most directly affected, this is a very serious matter. This is not something that affects us as we drive to work, or when we take a vacation, or when we attend a monthly meeting of a civic club. It affects us every hour of every day, in a most important way.

We trust that the Congress will carefully consider all the information available and act in a manner that will protect our environment and our livelihood.

I thank you very much for your attention and the opportunity to present my views.

Senator FANNIN. Thank you, Mr. Patton. You have made a very fine presentation. We appreciate your being here and I do want you to know that the elimination of surface mining would drastically affect this Nation.

We are in a fuel crisis you know, so it is important to all the Nation. I know in most areas of the country they have not concentrated, or have been forced to concentrate on the full economy of the view to eastern Kentucky. So, I understand the problems that you face and I hope that we can have legislation that will do, I think, what you would like to do and that is to protect the environment to the greatest extent possible and still make it feasible for you to have a profitable mining industry. That is certainly our goal.

Senator McClure.

Senator MCCLURE. I have no questions, Mr. Chairman. I appreciate the statement, and I particularly appreciate the attachments because I think the protest was beautifully written and the subsequent statement was therefore even more revealing.

Thank you very much.

Mr. PATTON. He is a very eloquent author, evidently. I don't know the man personally but I just happened to get a copy of the letters.

Senator FANNIN. I know that you worked diligently in preparing this statement and the attached information, and we do appreciate it.

Senator Hansen, do you have any questions?

Senator HANSEN. No, I don't. Thank you, Mr. Chairman.

Senator FANNIN. Thank you very much, Mr. Patton.

Mr. PATTON. I would like those pictures back unless you have a particular interest.

Senator FANNIN. May I just say that you have a very fine assistant with you here today.

Mr. PATTON. He has certainly enjoyed it, I hope he has not disturbed you.

Senator FANNIN. No, not at all, we are pleased to have him with us.

Mr. PATTON. Thank you, sir.

[The attachments to Mr. Patton's statement follows:]

September 1, 1971

Mr. Ward Patton
Box 5, Louisa, Kentucky

Dear Ward,

When I visited your "coal mine" in July you expressed some interest in seeing what I had written on the subject of strip mining. The material is enclosed with this letter.

Subsequent to my visit to your location and the revelation—the striking disclosure—I witnessed there I have added a chapter to my harangue. You will be particularly interested in this joinder.

You will have the unique distinction of reading my letter to Mr. Claude Wilson before he does. Although I wrote it early in August I hadn't gotten around to mailing it. I needed to revise some of the material which was to accompany it.

You will have to insert the name of your mining company in the proper space in the addendum. I cannot locate my notes on which it was recorded.

With one exception you are welcome to use this material at your discretion. I prefer that any publication (not the publicizing, but the printed publication) be done in its entirety. To publish the first part exclusively injures the interest of the progressive, the fair, coal operators. To publish the last part exclusively is not fair to my intent.

I stand for the development and use of our resources for the greatest benefit of all concerned. I am not against the mining of coal as long as the owners of the surface are properly compensated and the land is not permanently maimed.

For the convenience of other readers I have renumbered (in ink) the pages in which they should be read—just as they came off my typewriter.

I look forward to other pleasant visits with you in the coal fields.

Sincerely,

Tom Wallace, 2718 Minot Avenue, Cincinnati, Ohio. 45209

April 20, 1971

Editor, The Big Sandy News
Louisa, Kentucky.

Dear Mrs. Sparks:

Like most readers whom I have heard express their opinions I thoroughly enjoyed Mr. Claude Wilson's articles on the history of Louisa. For a man who had never practiced the craft to any great extent the quality of Mr. Wilson's writing suprised me. I hope he continues to help reconstruct our town's interesting past.

The Wilson articles took us back to (say) seventy years ago. How thoughtful it would have been if someone, 70 years ago, with Mr. Wilson's clear recollection and devotion to his home town, had written its history from 70 years back. That would have put it back to about 1830, eight years after the town was incorporated.

Then, in 1830, if some older citizen would have furnished an account of this section from the beginning of its settlement. Thus three persons writing at these intervals could have given us the whole interesting account.

A great deal more local history can be recalled, or dug out of old letters, newspapers, legal files, etc. I should like to see other interested persons garner in and record additional interesting facts on our town's history.

Let's all start writing. I have already begun, as the "Open Letter" enclosed with this letter shows. My account, however, is not history. It is scandal. It has to do with the present and the future of this section now being "undermined" by mechanized strip-mining operations.

With the growing "popularity" of strip-mining, I feel that my native Lawrence Countians are ready for another statement on the subject— a statement so strong that it takes hair, hide, and all, just as strip-mining takes hair, hide, and all (trees, soil, and all) as it scalps the land.

Here is the article. If you find it too long for one issue of The Big Sandy News you may run it in two installments.

Tom Wallace

2718 Minot Avenue, Cincinnati, Ohio, 45209

THE OTHER SIDE OF STRIP MINING: NOT THE DOLLAR SIDE

(An Open Letter)

We love our mountains, but we are losing them.

This is an open letter addressed mainly to my fellow-citizens of Lawrence County, my native county, but it is also addressed to those people living in the hundred thousand square miles of the coal bearing region surrounding Lawrence County. In a wider sense, it is addressed to all people everywhere who have coal or other mineral wealth lying within strip- or open-mine distance of the surface of the earth.

Our Big Sandy News prints a good many nice letters, but now a different kind of letter is in order. This is not a nice letter. Rather, it is an angry letter, but I'll guarantee it to be interesting. It's the kind of letter one feels like writing after a trip through the ruins of Appalachia.

I have read a few articles on the contagion our Appalachian region is subjected to—the uncontrolled spread of the desecrated earth, and I have seen much of it. I recently drove again through some of this barren moonscape on earth. Well, at least we don't have to travel to the moon to see what pristine desolation is like. We have our own. In many cases right in front of our own front doors. Our own abomination of desolation and valley of dry bones.

I have heard in my time many sad coal miner's songs, but the saddest song of all is the silent song that a despoiled and muted nature sings after the destroying angels have left, after the music of the power shovels, the bulldozers, and the coal trucks is hushed.

I wish someone would begin where I leave off. (When I leave off.) I wish someone more articulate would write something to arouse our Rip Van Winkles before they awaken on a bare and inhospitable rock. Write something, not for but against, these people who give their fatal signature agreeing to such plunder, these sellers of birthrights and these pillagers of resources who destroy every resource in order to get at a quick profit on one.

This graveyard scenery—this stark land—this doomsday landscape expanding all around us gives a good case of a country cursed by its mineral wealth. These strip-miners are laying bare the foundations of the world, the roots of the mountains, the bare bones of our living, and no skeleton can live without its covering of flesh. The nude and denuded mudsills we see exposed throughout Appalachia were intended to (and once did) underpin a green and golden land instead of cradling, as it now does, in its dead arms the overturned, plowed-up, convulsed and dead shape of a dead countryside.

Of course we can't have our cake and eat it too, but I have seen coal mined in other ways and I do know that enough coal still remains deep enough underground that you don't have to ravish the country to get at it. You don't have to destroy the dining table to eat the cake.

With the speed of a bulldozer, throughout Appalachia, by hundreds of acres a day, strip mining encroaches on our beauty spots and our tillable land. These operators are destroying all of the land's resources to make a quick dollar on a single resource. They take everything. Rather, the tragedy is that they take nothing but the coal and destroy everything else in taking it. They destroy mountains and foothills and meadows, the timber and every green herb; the wild life starves, and the last man won't even possess a stick of kindling big enough to warm one last time his emaciated dying flesh or a lump of coal big enough for his appropriate grave marker. We are seeing demonstrated in its most accomplished form what promoters will do for a dollar. And yet some of these strip mine operators would have you believe that the terraced Gardens of Babylon spring up in their traces. On recent trips I have gazed sadly on thousands of acres marked by their deep and indelible tracks and over most of the boundary I haven't seen a tree big enough for a man to hang himself on if he wanted to.

Our living comes from the surface of the land, the upper thin few feet, not the bed of rock that underlies the coal. Yet these operators, if they could, would convince you that the underbedding rock (or shale, or clay, or slate, or whatever) is dormant fertile soil, awaiting since creation the seedtime and harvest, awaiting the tiller and the seed and the sun and the air and the rains. These operators would make you think they were paying you for the privilege of taking the cover off an incredible richness of soil.

The truth is that after they are gone the seasons will return, but in vain. The harvest-time will be empty and the springtime meaningless.

Rocks are beautiful in their place, but not this scalped rock—not in a thousand years, and never in mortal time will it disintegrate into the cycle that eventually feeds man and beast. Rocks are beautiful in their place, as every mountaineer appreciates, but rocks won't grow corn and potatoes. I heard someone say once that while you are in a dire predicament such as being lost or treed by a bear you can at least appreciate the scenery, but no one lost in the broken landscape these miners leave behind will appreciate it. You can't enjoy scenery on an empty stomach.

These strip-mine operators! They are laying bare the foundations of the world and the desolation they are leaving will not support life. Someone, in responding to this letter, may say, "These hills were never good for anything anyway." I answer, "They were good enough to nourish several generations of stalwart Americans."

But it took these earlier generations a long time to improve or to scar or mar their inheritance. They worked with the mattock and the axe and a crude plow and, except by fire, any adverse effect they had on the land was generally slow in coming. But things have moved along. Now, under modern machinery, the sun can rise today on a green and pleasant land and rise tomorrow on a wretched, wrecked, and plundered wasteland forlornly echoing to its last trainload of coal. And the late owner, the descendant of the first settlers, is left stranded and hungry at the end of the world. Or he may have gotten enough out of the transaction to establish himself meagerly elsewhere as a stranger in a strange land—or to pay his fare to the welfare office.

They are not just indulging in wanton waste in the way they are extracting a lot of coal in this country. This is sheer vandalism. It is like burning a valuable painting. (No, let me reframe the comparison.) It's like throwing an irreplacable and priceless painting in its antique and priceless frame into the fire to get an hour's heat when there is an abundance of firewood to be gotten elsewhere. As another comparison, it's like planing down and destroying a valuable and antique table, inlaid with all types of valuable wood, in order to recover a paper-thin layer of gold leaf under the veneer.

Mechanized strip-mining is mechanized vandalism! These modern and money-hungry operators! They are making a wilderness out of what was a wildness of beauty and a cornucopia of wealth. They are laying bare the foundations of the world and the desolation they are leaving behind will not support life. And neither party, the operators or the losers, have a moral right to do this. The stewardship is temporary. The ownership of land passes from parent to offspring, from party to party, or from hand to hand, and our tenure of the land is as evanescent as the morning dew. No one has a right to profane, to desecrate the land because he, temporarily, has a title deed to it. No one has a clear title to land, anyway, in spite of what the abstractors might say. Henry George, the economic and social philosopher, once wrote that if any land title is traced back far enough it can be traced back to theft. No man, since Adam lost the Garden, has had undisputed title to the land. And certainly one or two generations, no matter how great the temptation for profit (Much of this coal is stoking the booming economies of West Germany and Japan.) or the crying need or the dire emergency, has the authority or the moral right to destroy utterly "God's green footstool." If we destroy God's green footstool we have a god with muddy feet.

In case you don't know it, further refinements are on the way. These strip-mined mountainsides can be made more ghastly yet. Did you ever look at the face of a seam of coal after it had been stripped back until the overburden was too heavy to be ploughed away? That's when auger-mining takes over. Auger-mining is a process especially planned, it seems, to spill more mine acid into our poisoned streams flowing through a land already beginning to die of unquenchable thirst. After auger-mining, the parentheses (the pillars) of coal that are left look like snag teeth hanging in the skull of a dead earth. A skull with broken teeth grinning out at dead emptiness. The evil that men do lives after them--forever.

Is it any wonder that modern man feels himself frustrated and disinherited? The earth's irreplacable resources are being used up fast enough, but destroying the land to get at the coal is adding insult to injury. These operators are doing more than stripping and boring-out coal. They are digging the grave of a society and a culture. Throughout the world the last two generations of men have given this earth, their home, the worst beating it has taken from all preceding generations of men--since Adam. If a half dozen generations

before us had been such wastrels I wouldn't be writing this and you wouldn't be reading it. After touring parts of wrecked Appalachia I must say that strip mining certainly leaves its depth of imprint. It leaves the landscape wearing a ghastly, apocalyptic look, and I use "apocalyptic" as foreboding imminent disaster or final doom. Strip mining generally leaves the land as dead as the moon.

Back to the Henry George truth that all land titles can be traced to a questionable transaction, a good many of the mineral rights in eastern Kentucky were acquired by stealth. (Stealth, incidentally, is a very old word for theft.) Many of the older generation who sold their mineral rights (rights not only to the coal but to oil, gas, and all minerals) for fifty cents an acre could not forsee the destitution that goes hand in hand with modern mining. Fifty cents an acre! Even the buyers had no idea of the magnitude of the bargain. A good many of the original owners, many of whom could not read, thought they were merely selling coal rights when, as a matter of fact, notarized fact, they were giving up their hold on their entire property, lock, stock, and barrel.

Promises and understandings and title deeds aside, I speak for the vast majority of the people when I say that most of them feel the way the writer of this letter feels. We don't care if the strippers could level our beautiful, albeit abruptly upstanding hills, to the levelness of an Illinois prairie, then cover the area with soil as rich, six feet, as that prairie soil once was, and render it as lush as the acres in California's Imperial Valley, we still don't want it that way. We love our mountains and we are loath to lose them. But we are losing them.

I write urgently. As a native of this section there is a special reason why my letter is urgent. Have evaucation plans been made for my fellow-citizens of Louisa? They may have to run someday for their lives on short notice, for the drilling records of some deep wells show a five or six foot vein of coal under much of Lawrence County. It's several hundred feet down, but what's a hundred or so feet to the mechanical behemoths that greedy men are building to move mountains. Is there an emergency route by which my townsmen may escape?

The little groundhog, digging its burrow, asked, "Mama, am I deep enough?" "I don't know, son, how deep are you?" "About eight feet." "I don't know son, your granddaddy was down sixteen feet during the Depression and they got him."

Back to the mines. Outside of the quick dollar factor, let us look at some of the other bright features of strip mining: (1) Much of the coal goes to foreign countries to run their booming factories which, in turn, export their products to the United States to undersell our labor. That wasn't so good, was it? Let's try again. (2) It facilitates the study of geology because it uncovers the rock strata. But the rock is indigestable, and geology is a rather abstract science, like poetry. It has been demonstrated that I can come as near living on poetry (on it, not "off" it, reading it, not writing it) as the next man, but it won't feed my family. (3) It upsets an old political code: "To the victor belongs the spoils." After strip-mining, to the victim belongs the spoils. Well, at last, (4) here is a sound argument in favor of strip-mining: It is a sure way of permanently ridding our communities of the ever-recurring problems of better roads, better schools, and better churches. After the population goes there aren't any problems.

Strip-mining! That we should ever have lived to see such a frivilious and vain use of the land. If this letter opposes progress, then let us all lie down in front of the bulldozer of progress.

With this, my letter—like the green land—is finished.

Tom Wallace

8-1-71

(Material to be incorporated in a longer "open letter."

But it is hard to stop writing. Ravished, dying Appalachia weighs heavily on one's mind and heart.

God's green footstool. Our ancient home. The human record.

To best appreciate the lengths and depths of human avariciousness one needs a before and after acquaintance with the condemned land. To have seen and known these beautiful hills and mountains before the termite invasion and then to see their rubble afterwards. The rubble and debris of God's green footstool. They ought to have to build it back by hand.

The Recording Angel, you know, still writes, and neither subterfuge nor artifice nor devices nor lies shall ever appear in that faithful account from which we shall all be judged. Somewhere in the Annals of Eternity let us hope it shall not be written that in the same century in which man reached the moon he destroyed the earth.

Tom Wallace

August 4, 1971

Mr. Claude T. Wilson
Louisa, Kentucky.

Dear Claude,

Some weeks ago, in a letter to the editor of The Big Sandy News, I paid you a very nice compliment on your Louisa articles which I enjoyed reading so very much.

If I had confined my letter to remarks on your series and the history of our home town I am certain it would have been published, but it so happened that, appended to this short letter to the editor, was a longer one (on another subject) addressed to the people of Lawrence County. This "open letter" probably caused my entire effort to be censored. Copies of both letters are enclosed. Read and you will understand.

We recall that the Tennessee Valley Authority was set up as a model project to help an impoverished region. Ironically enough, this model has become the biggest factor in the desecration of Appalachia. TVA is the biggest consumer of Appalachia's strip-mined coal.

In a like manner it looks as if that big engine at the mouth of Blaine will result in a lot of adverse landscaping in Lawrence County. In his book Night Comes to the Cumberlands, Harry Caudill writes, when he mentions this installation, "strip mining companies have leased nearly half the coal in the county."

At the rate the strip-miners are chewing up our part of Kentucky, Louisa's sesquicentenial next year might also be a fitting time to conduct funeral services for Lawrence County. With that sad prospect in mind, I hope, by the time the sesquicentenial rolls around, to add a good deal more to my open letter, get some suitable pictures to go with it, and make it available to a wider public.

I sincerely hope that you enjoy my "writings" as well as I enjoyed yours. I request your opinion on this material. Take it next door and let Richard and Nola read it. You may let anyone else read it who wishes to do so.

Sincerely,

Tom Wallace, 2718 Minot Avenue, Cincinnati, Ohio. 45209

August 15, 1971

The Second Open Letter

It is now time for me to put in a word regarding the bright spots and the hopeful signs discernable in the picture of the three million or so acres which have been strip mined in this country.

I do not belong to the antiscience cult. I am not opposed to progress. I am not opposed to the extraction and utilization of coal. Coal has done much to produce the high standard of living which we enjoy. It has made my life easier. It has warmed me through many a winter. It helped produce the automobile I drive. I am not opposed even to strip mining if it is fairly performed and the owners of the surface fairly reimbursed. In support of these statements I am happy to begin another chapter in my observations and opinions.

I shall now cite a case where the strip-mining of coal, besides providing employment for a number of men and thereby bring bread to a number of tables, brought, in my opinion, a farm owner as much cash as his farm (before the method and the market for his coal materialized) was worth and also increased the present worth of his farm considerably by adding to its living space.

The inspection which, a few weeks ago, I made of the strip-mine operation by The _____ Mining Company at ~~Ledocio~~ Ledocio, Lawrence County, Kentucky, was a revelation to me.

I didn't have to introduce myself to Mr. Ward Patton, the gentleman in charge of this operation. We were old schoolmates and friends of a lifetime. However, I did announce my mission rather abruptly. I told him I had not come in peace but had come, rather, as a stern and bitter critic of strip mining as I had seen it practiced and I came as the author of a proposed newspaper article (on strip mining) so reeking with vituperation that the editor of the county newspaper, another lifelong friend of mine, couldn't publish it.

Whereupon Mr. Patton kindly invited me to spend as much time as I wished looking over his company's operations. I was there something like three hours going over every foot of it and was joined at the end of my tour by Patton and the landowner, Mr. Kay Estep.

About twenty acres of the 70 (or so) acre farm was involved in the strip-mining operation and most of the mining had been completed. The area mined was about two-thirds up a rather rough hill which was too steep for cultivation and had been covered with a poor stand of second growth timber.

Mr. Estep seemed very pleased with the trade he had made. He had received approximately $10,000.00 for his coal. His farm had gained twenty acres of level land ready to be sowed in grass. (You may subtract from this twenty acres the area covered by two fish ponds one of which was beginning to fill with clear water.) Having a long acquaintance with mineral-starved hillside land (I grew up on it.) I must say that with the fertilizer being used this area constituted a much better agricultural property than it was before the mining began.

The highwall which was left seemed as respectable and almost as scenic as much of the cliff land in eastern Kentucky. The spoil bank, not much different, it appeared, from the original contour, was to be planted in trees. The seam of coal, too deep for further stripping, left at the foot of the highwall, was being covered with a heavy bank of dirt—to check acid seep from the coal. As I say, this little tour was a revelation to me. It shows what can be done.

As I stated before, it is my opinion that this owner received more for his coal than the entire farm, mineral rights and all, had been worth a few years back. With its twenty improved acres, and the ponds, it is worth considerably more after mining than it was before.

Here was a case where the mining industry was putting out an effort I was not too familiar with. I had stopped to criticize but I left in quite a different frame of mind.

On July 28th, this year, on the Right Fork of Little Blaine Creek in Lawrence County, Kentucky I saw a most encouraging sign. I am suprised that such a quality of land reclamation can be achieved in steep country. Those bulldozers aren't all bad and there are more than one kind of mining companies.

You know, I felt at first like telling Patton I was suprised to find him in the business. But that was before I saw the parcel of land he had improved. I was familiar with his deep love for the land. Years ago we had tramped many a mile together through the fields and woods. I am glad now, after my stopover, that men like him are getting in the business. We need the coal and we need the conservation and reclamation and he uses a good formula in mixing them.

These latter pages are not intended to constitute a retraction of my reactions and feelings expressed in my original "Open Letter." They do, however, initiate a change which I realize is needed in the projected article—it might even grow into a book—which I intend to write. I see now that my effort, to be thoroughly fair and effective, must be divided into two sections: the Unfair and the Fair Usages of Strip Mining.

Tom Wallace

Senator FANNIN. The hearings are now concluded. Senator Metcalf, the chairman of the subcommittee stated that the hearing records will be held open for 10 days.

The hearings are now adjourned.

Senator MCCLURE. Mr. Chairman, just before we do that, would you allow me to extend my apologies to Wes Chadwick, who appeared and testified earlier this afternoon while I was detained at another meeting and couldn't be here? I wanted him to know that I appreciate his statement and I have read it.

It has the kind of specific suggestions that I would have expected from him. And, I think it also has a couple of very, very succinct statements in it that are worth drawing attention to.

One is the fact that the remedies in the bill are one-sided remedies, that the enforcement procedures are one-sided enforcement procedures. I think that is something that we need to consider as we draft legislation.

The other is a long-range prediction, which appears on page 2 of his statement. I would just like to repeat it, "The fuel crisis very predictably will be followed by a metal crisis, a construction materials crisis, a fertilizer crisis, et cetera," and I think we had better keep that in mind, too, as we deal with legislation that has something to do with the utilization of our natural resources.

Senator FANNIN. Thank you, Senator McClure, for reemphasizing the importance of that testimony. We are very thankful to Mr. Chadwick, and to the others that have testified here today.

Is there anything further that should come before the hearings?

Then we stand in recess. We stand adjourned.

[Whereupon, at 4:55 p.m., the hearing was adjourned.]

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