

Proceedings of

# **PRIME, FARMLAND INTERACTIVE FORUM**

University of Southern Indiana  
at Evansville  
March 3 & 4, 1998



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*Sponsored by:*

U.S. Department of Interior, Office of Surface Mining, Alton, Illinois  
Coal Research Center, Southern Illinois University, Carbondale  
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Texas Utilities

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# Prime Farmland Interactive Forum

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# Foreword

August of 1997 marked the twentieth year of reclaiming prime farmland under the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The new rules defining prime farmland reclamation and their promise of post mine agricultural productivity have been a topic of intense interest both before and after the passage of SMCRA. The importance of prime farmland soils to the agricultural community, as well as the mandates placed on the coal industry, has made it one of the most heavily researched topics associated with surface coal mining. Volumes of information on reclamation methods, compaction management, productivity, and minesoil-crop interactions have been produced.

Progress has certainly been made since the passage of SMCRA. Coal mine operators are successfully attaining their revegetation goals and obtaining bond release. In some parts of the country, operators are actually improving premine clay pan soils or even, through selective material handling, constructing prime soils where none existed before. The yearly acreage being disturbed has rapidly diminished because of the reduction of surface coal mining in the Midwest. Thousands of acres will still remain in the reclamation and bond release process for the next ten years. The increasing use of underground mining methods in the Midwest, with the potential impacts to prime farmland, has been largely unanticipated by SMCRA.

While proven successful reclamation methodologies have been developed and adopted by the industry, concerns still remain with the public, industry, and regulators. State regulatory programs may be different due to regional needs and environments but the general concerns are the same:

- 1) The bond release process needs to be expedited.
- 2) Is reclamation success sustainable?

Current research efforts are beginning to address these concerns. Evaluation of productivity from soil properties and monitoring yields from twenty year old research sites are new initiatives receiving attention. The Natural Resources Conservation Service is actively working on an initiative to formally publish a detailed guide on the reconstruction of prime farmland soils. Initiatives to classify and map reconstructed soils will provide needed information on productivity and land use capabilities just as we have for natural soils. Prime farmland reclamation is no longer in its infancy. It is in the final states of refinement and mainstreaming with other proven technologies of this century.

I would like to sincerely thank the speakers, authors, and the administrative staff at the Coal Research Center for their time and efforts devoted to make this program a success, and especially the Steering Committee members for their assistance in planning and presenting this forum.

## **PRIME FARMLAND FORUM STEERING COMMITTEE RECOMMENDATIONS**

The following research needs, based on the results of the forum, were identified by various members of the steering committee, although no consensus was reached on any particular need nor was any set of priorities established for the needs listed:

- C Develop and publish region specific guidance on post reclamation management.
- C€ Development of new soils series for classification of man-made reclaimed soils that would adequately and accurately provide important functional characteristics including new productivity indices.
- C€ Development of a soils based productivity model with appropriate compaction standards that could be utilized to substitute for actual crop production. (This need was objected to by the Citizens' Organizing Project.)
- C Development of a more mobile soil penetrometer system.
- C€ Expansion of penetrometer studies for validation on a wider range of soils to include additional coal producing regions and states.
- C Location of reclaimed prime farmland units by GPS for reference in future research studies.
- C€ Evaluation of prime farmland performance over a longer term than that required by SMCRA to determine if productivity is being adequately maintained.

## PURPOSE OF THE PRIME FARMLAND INTERACTIVE FORUM

**INTRODUCTION:** The steering committee has worked hard to provide each participant with the opportunity for a free, frank, and open discussion on issues related to the restoration of prime farmland disturbed by coal mining in an atmosphere that is both professional and productive.

During the two days of the forum, we have the opportunity to talk about technical, regional, and local issues, while examining new and existing methods for finding solutions, identifying problems, and resolving issues.

The forum gives us the opportunity to:

- C share our experiences and expertise concerning prime farmland restoration,
- C outline our reasons for taking specific actions, and
- C give a rationale for why we should or should not be handling prime farmland soils at our mines in a specific manner.

A basic assumption of the interactive forum is that no person present has all the answers or understands all of the issues. It is also assumed that issues, solutions, and concerns may be very site, region, or state specific or may have a very broad application.

The purpose of the forum is to:

- C present you with the best possible ideas and knowledge during each of the sessions;
- C promote the opportunity for questions and discussion by the participants; and
- C let each person decide what is most applicable to his/her situation.

The purpose of the forum is not to come up with new policy or regulation, but to empower the participants with better knowledge, new contacts, and new opportunities for problem solving and issue resolution.

**BACKGROUND:** August of 1997 marks 20 years of reclaiming prime farmland under the Surface Mining Control and Reclamation Act of 1977 (SMCRA). Prime farmland restoration and its promise of post mining agricultural productivity has been a topic of intense interest both before and after passage of SMCRA. The importance of prime farmland soils to the nation's agricultural community has made it one of the most heavily researched topics associated with surface coal mining, producing volumes of new information on the relationship of crop production to soil compaction, fertility, texture, and management.

The potential impacts of coal mining on prime farmland are very different from when SMCRA was first introduced. Coal mine operators are successfully attaining their revegetation goals and obtaining bond release. In some parts of the country, operators may be creating prime farmland soils where none existed before. The yearly acreage of prime farmland being disturbed by surface coal mining is rapidly diminishing because of the reduction of surface coal mining in the Midwest. The increasing use of underground mining methods in the Midwest, with its potential impacts to prime farmland through subsidence, has been largely unanticipated by SMCRA.

Controversy, however, remains. The scientific community is still unable to lift the shroud of complexity associated with projecting actual crop yields based on the measurement of existing soil qualities. Considerable difference of opinion still exists on the long term impacts of surface mining reclamation on the potential agricultural productivity of these soils. The Natural Resources Conservation Service (NRCS) is actively working on an initiative to formally publish detailed guidance on the reconstruction of prime farmland soils. Initiatives are needed to remap and reevaluate the "man-made prime farmland soils" now being returned to agricultural production so that essential information related to land values, crop production capabilities, and tax assessments can be accurately established.

## LUNCHEON REMARKS

March 3, 1998

Kathy Karpan, Director  
Office of Surface Mining  
U.S. Department of the Interior

First, I would like to thank everyone who is involved in this event either as a sponsor or as a participant. I really have an investment in this subject because of my history as a daughter or granddaughter of people who were coal miners and farmers. I have always appreciated what both industries have to give; however, the coal only gives once, the prime farmland, if we manage it right, continues to give and is truly a renewable resource.

It was very interesting to be listening in the audience and to see the mix of people who are here today. I have heard people from many states including Kentucky, Kansas, Missouri, Illinois, and Indiana. We have people from the academic community, industry, and the farming community. I think it is an excellent idea to have these interactive forums.

I arrived at my own version of this type of event earlier this year. In the Office of Surface Mining, we are doing a lot of things that potentially have an impact on people in the coal industry and the states, but we never talk to other agencies to find out what their projections are, what they are doing, how they are looking at the future, and where they see the trends going. As a result, on January 21, 1998, we held a coal symposium where we brought in the Department of Energy to do some projections on how our nation's energy needs will be met and predictions on coal prices. We brought in the Mining Safety and Health Administration to explain the differences in their inspections. We brought in the Army Corp of Engineers and the Environmental Protection Agency to talk about their related programs. We had 250 participants and the reception was so great that we will now be having a coal symposium in each OSM region. What you will see happening in the mid-continent region will be similar to this interactive forum except that it will not focus on a single issue like prime farmland but will be on a number of issues important to the mid-continent region.

I would like to rise to the defense of Paul Ehret of the Indiana program when he asked the question about whether or not the Surface Mining Control and Reclamation Act of 1977 (SMCRA) has been adequate or not in protecting prime farmland disturbed by coal mining. Finally, after he forced the issue, the panelists across the board stated that SMCRA was adequate, if it was implemented correctly. That is what we needed to hear and that is the point that Paul wanted to make.

At this point, I would like to start with something that we don't do very often and try to lift the dialog above the specific issues and say some basic things we need to hear. One is that SMCRA was a very good idea. This is based on my personal background, this is not something that is a result of some intensive indoctrination I received after I was sworn in as Director of OSM. I grew up in the underground coal mining community of Rock Springs, Wyoming where the subsidence problems were so bad that SMCRA made legislative findings to that effect. It was a wonderful immigrant community from all over western and eastern Europe. They had a great sense of aspirations and hope, and they were all struggling to become Americans. I appreciated what the coal industry meant in terms of income and our national security, but I also saw members of that community with black lung problems, broken backs, and amputations. The idea of reclamation in those days was to nail two boards across the entrance to the mine and walk away.

About 25 years later I got out of college and had the opportunity to work for a Wyoming congresswoman, Tina Roncolio, who was one of the prime SMCRA sponsors. I well remember the early discussions about whether there ought to be legislation to control surface coal mining. Some people felt we should just ban strip mining entirely. Others said that regulating the industry would drive it out of business. Time has shown that they were both wrong. SMCRA proves that we can do it right. The answer is that there is nothing wrong with SMCRA. We can make it work and that is what forums like this are all about. As befits all works of men and women and not of God, however, we and SMCRA are a work in progress. What it may eventually mean we may never know. All we can say is, that in contrast to the gloomy predictions and indignation of critics on all sides, 20 years after the initiation of SMCRA, we have twice the coal production at almost half the price. We are mining in a careful way. We are doing our best to

reclaim the land and, with fees paid by the industry, we are going back to clean up the generations of neglect from abandoned coal mines. Not a bad piece of work.

Today our focus is on one of the works still in progress, namely prime farmland restoration. This is the most important land that Congress wanted to protect because it sustains us as a country and much of the world. One of the things that needs to be brought out by this meeting is to note that worldwide there is only about 3.3 billion acres of economically farmable land to feed the 5.8 billion people on the planet. It will stun you to point out that this averages out to about one half acre of agricultural land per person. Contrast this to 20 years ago when SMCRA was passed when the world population was not 5.8 billion but only 4.5 billion people and the ratio was three fourths of an acre of agricultural land per person. That contrast, all by itself shows you the challenge we as a nation have in feeding the world.

Picking up on an earlier comment, 20 years ago we realized that urban sprawl and interstate highway developments were great threats to prime farmland. Congress also had the insight to see that the development of coal could be a threat to prime farmland. Some 43.4 million acres were identified as prime farmland underlain by economically recoverable coal reserves. This is about 17 percent of the total acreage of prime farmland soils. This is not an insignificant figure. Because of the recognition that the development of coal, in addition to urbanization and roads, could threaten our ability to produce food and fiber for ourselves and the world, Congress made special provisions for the care and restoration of these lands. For those of you who have a sense of history (I did not realize this until I was working on my remarks), SMCRA represents the first time in our history that a law mandated that a specific human activity can be conducted only when there is no net loss of prime farmland acreage or productive capacity. The coal mining statute is the only one that specifically protects these prime farmlands. I also want to support an earlier comment that not only can we protect, but sometimes we can enhance the productive capability of the land by the new ways we learn to conduct our reclamation. There is a lot of promise that the dreams of SMCRA will be fulfilled in the future in ways that we are only imagining now.

The intent of SMCRA was not to discourage coal development, but rather to assure that care would be taken so that coal mining would be environmentally sound and the land disturbed by mining would be restored to its pre-mining capabilities. In making the determination that nothing is more local than the land, Congress also made the judgement that the states were in the best position to administer the Act and therefore determined that local mining and environmental conditions were to be incorporated into each coal mining and reclamation operation. An integral part of this process has been the active input of land owners and citizens in making the decisions that are involved in approving permits. Very few statutes have safeguarded the citizen role as specifically as SMCRA. We are seeing that by the people who have joined us today. In many of the prime farmland states, there has been a strong public interest in reclamation. In fact, we have seen that groups such as the Citizens' Organizing Project not only got involved but have stayed involved, working over 20 years to protect these valuable resources.

In the 20 years since the passage of SMCRA, we have seen dramatic changes in the coal industry. Some of them have been mentioned this morning. One significant fact is, that in the corn belt, coal production by surface mining is down. If you look at the states of Illinois, Indiana, Ohio, Iowa, and Missouri, coal production by surface mining methods has fallen from 84 million tons per year in 1980 to 47 million tons per year in 1996, or a 44 percent reduction in surface coal mining. In Illinois alone, coal production by surface mining methods has fallen by 70 percent in the same time period with the majority of its production now being produced by longwall underground mining methods. So the circumstances in which we are working are changing. Thus, the number of acres of prime farmland that were expected to be mined and reclaimed in the process of surface coal mining is not what it was expected to be. In addition, the amount of underground mining is significantly more and these trends are expected to continue. As we gear up to see these changes in more production of western coal and in longwall mining that can be done more efficiently, the issues we are wrestling with today will not go away and will take on a different focus.

Both before and after SMCRA, the restoration of prime farmland soils has been a topic of such interest that we think it might be the most researched part of our whole SMCRA set of issues. Volumes of new information have been produced showing the relationships of crop production to all aspects of surface coal mining and reclamation and the special methods and equipment developed to ensure successful reclamation, restoration, and management. I think it was fascinating to hear a research presentation and comments from the audience on how the study might take on different aspects and encouragement from the author for more ideas to come forward. So, as with SMCRA, the

research is a work in progress. I think that alone is worth the price of admission to see this type of idea sharing. We do want to pay tribute to those who have given us the intellectual grist for the mills and, although I don't want to name anyone as I will surely leave someone out, I understand that researchers from the University of Illinois, University of Kentucky, Texas A & M University, and University of Iowa, some of whom are here with us today, have led in that research effort. Their work and the work of others is providing an invaluable body of information that we can use in the future.

As for the Office of Surface Mining, I want to talk about what we want to do here and then what the future holds for us. In my administration, I have said that we want to accomplish things that all provide a better value to you for the dollars we receive.

- We want to have better reclamation because we have a better appropriation to go to work on the thousands of abandoned mine land sites that are out there. Enhance AML where we can leverage dollars out of the private sector toward that goal.
- We want to have under better regulation some real movement toward re-mining in states like Virginia and Tennessee where we think, with careful controls, re-mining can be done right.
- We want to have electronic permitting.
- We want to go to work on contemporaneous reclamation issues in the West.
- A big part of what we want to do in the future is to do a better job of technology transfer.
- One of the priorities I see is to try to get more research done. With the departure from the scene of the Bureau of Mines, we have seen a gap in applied research that we can put out in our network. That is something I want to think about. I hope I can do something about this and would welcome your ideas.
- We use mechanisms like SOAP, TIPS, and the states to disseminate the results of research and best practices.
- Another one of our goals, in the regulatory area, is to make better science based decisions and use technology as fully as we can.
- The last goal I have is to make OSM a better agency by lifting the skills of our people by providing better training and educational opportunities and gearing up for 21<sup>st</sup> century OSM. In the next century, I think our role will be to be consultants in trying to grapple with problems. We should not be in the position of saying "That is a problem! Write the ticket!" Nor should we be saying "That is the problem! The state should write the ticket!" What we should be saying is "We have a problem. Let's see what we can do to solve it."

Beyond what I think we are doing in our own country, something else should be said at gatherings like this. We are the envy of the world for what is happening in this room today. We have people all over the developed world and in particular the developing world who are living amidst the ruin and the devastation of prior energy production and in many cases doing little or nothing about it. We have in our office a delegation that went to India and currently we have three OSM employees who are in Indonesia at the World Bank's behest. We have had visitors from Mongolia, Hungary, and South Africa interested in what we do. Literally there is a world out there that is fascinated that we have been able to do something that the critics said we couldn't do 20 years ago. That is to meet the energy needs of this country in a way that will protect us in terms of our national security and will fuel an economy that is enjoying the longest sustained period of growth in 30 years and not do it at the expense of our environment.

When you come together in a meeting like this you don't say, "Let's rest on the laurels of the last 20 years." Instead, in a very serious, conscientious, future minded, and respectful way you ask each other what can we do better to this wonderful prime farmland resource? What can we learn and pass on today? How can we get one more acre into good production knowing that there is only one half acre of good agricultural land for each person in the world? This is actually a wonderful example of what SMCRA was intended to accomplish. We are meeting our needs and doing it in the right way, sharing our research and looking in every way to get better and better. I say in all seriousness to all of the people who have worked so hard on this event. Congratulations!

It is not every day of the week that you can go home and say that I did a very good job today. But I think that these kinds of conferences ought to lead you to say, "I did a good job today for my country and for the world." This is what I think that the 21<sup>st</sup> century will be all about. It won't be about bringing our living standard down to some pre-industrial age level because we can't live with the impacts. It will be meeting our material needs in a way that is extremely sensitive to this planet and in a way that this is environmentally sound. We will be constantly challenged to do a better and better job so that we don't just restore the land but that we enhance and enrich in every way we can.

What you are doing here will make a difference. If out of this event you establish a consensus that some things ought to be different and need to be taken to the top level of OSM, tell our OSM people here and tell Brent Wahlquist our Regional Director and we will listen. We will consider it and we will take it up. That is our part of what is going on here today, to be open, to listen and learn, and always be willing to work with you, and that I promise we will do.

## LUNCHEON REMARKS

March 4, 1998

Ray Sinclair

Natural Resources Conservation Service  
U.S. Department of Agriculture

The first thing I would like for you to notice is that 90 percent of the people who understand prime farmland restoration are in this room today. It is an honor to be speaking to the group of people who really understand what prime farmland restoration is all about.

I would like to thank Kathy Karpan for her remarks yesterday about our constant loss of agricultural acreage not only to surface mining but to many other uses. Anything that we can do to reduce the loss of agricultural lands is very important. History should note this effort in the field of surface coal mining as a very special attempt to protect the lands that feed the world. It has been very alarming for me to watch the area between Denver and Fort Collins, Colorado that has been converted from agricultural lands to houses over the last few decades. Much of that land in terms of soil properties was prime farmland. We are losing land very quickly to developments like this.

I would like to read something written in 1985 by Dr. Ivan Jansen from the University of Illinois that describes very well what we are trying to do this week. "My concern as a pedologist is primarily related to the characteristics of the finished soil rather than about how the reclamation is done. It is apparent that some material handling methods are producing better soils than others. Perhaps less expensive means could be devised that would produce soils that are as good as or better than the best soils we are seeing now." I am sure that if Dr. Jansen could be here today he would say that we have made great strides since the late 1970s. I have been involved in prime farmland restoration since the beginning, and there is no comparison of what I saw in the beginning to what we are seeing here today. The people in this room are the ones who made it all possible. This has been one of the greatest partnerships of people and institutions that I have been involved with.

SMCRA required the Secretary of Agriculture to develop specifications for removal, storage, replacement, and reconstruction of prime farmland soils. The only responsibility of the Department of Agriculture on mined lands relates to prime farmland. I am disappointed because we started a rule in the *Federal Register* several years ago in order to accomplish what we were required to do by SMCRA in 1977. I can tell you that we are getting closer. I told you that four years ago, but we are getting closer. We had hoped to have it published in the *Federal Register* by now but we have been asked to rewrite a few paragraphs and make a statement of what its effects will be. We do plan to have it published in the *Federal Register* some time this year. I hope you all have a chance to look at the rule and regulation when it is published, and we sincerely want your comments. I think it will help us all have an overall appreciation for what we would like to have done as far as reclaiming prime farmland soils. Based on what I have heard at the forum so far, there is nothing that will come out in this rule that will not complement what has been said here. During the development of this rule, I made sure that I utilized the data developed by the experts at this forum to ensure that I would have the latest scientific findings in the document. This rule will integrate both the experience of the Department of Agriculture and the work that the experts at this forum have developed over the years. I can't give you too many details because we have not yet released the document for public comment. I can give you some general ideas of what will be in it.

The four things that soil scientists are concerned about are the physical and chemical properties of the soils, landscape features (in both the semi-arid and humid parts of the country), and climate. The proposed rule will cover all four of these concerns.

I would like to talk about soil properties, landscape, and climate. I developed a guide to array the soils of the United States for producing food, fiber, and seed. I have since learned that the Canadians have done something very similar. I bring this up to relate to concerns I have heard here about developing a soil based productivity index to utilize some

time in the future in the process of bond release. In this case we may not have to grow crops in order to determine that the soil meets the bond release criteria. This may be possible. But it is only possible because of the fact that we have had all of this good research that has taken place over the last 20 years. The procedure that we are using now to measure soil productivity with crop yield is much more flexible than if we had to write criteria based on soil properties, landscape features, and climate. This can be done, but we will have to write these criteria in such a manner that we will have no doubt that the soil will be returned to the original yields it was capable of producing before mining. In addition, when we are not going to grow a crop to prove productivity, we will have to figure in a sufficient safety factor to ensure full restoration of soil capability.

The present guidance that will be coming out as a proposed rule in the *Federal Register* will take today's knowledge and provide uniform guidance to the restoration of prime farmland soils. Hopefully this will help people develop a plan for reclamation. It is only a guideline and will not dictate any particular methodology. It will suggest areas that should be considered when developing the reclamation plan. It fits in well with all of the current State and Federal rules and regulations. It should not create any difficulties with what is now being done in the states. At this time proof of productivity by actual crop yields is the best method available. We are very willing to work with other methods as the data is developed. We need to know what numbers to fill in the gap between 180 psi and 280 psi suggested in the talks earlier today.

We do plan to work on better soil classification systems so we can go back into the reclaimed areas and re-map and classify them. This would be a real opportunity for us. We could obtain the reclamation plans for each area and know exactly how each area has been reclaimed. Normally we never have this type of documentation. The mapping should go fairly quickly if we can obtain the documentation that is available in the reclamation plan. The reclamation plan should contain all of the information we would need to re-map the area. Every state has its own re-mapping program. Some states re-map on a cost share basis and others establish a priority system. Certainly if the county tax assessors make it known that they need this information, that should increase the possibility of a timely effort in mapping these mined areas.