
Executive Summary

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A. Introduction

Congress has the constitutional responsibility for managing and disposing of Federal onshore land, which constitutes approximately 30 percent of all onshore land in the Nation. The Federal onshore land is concentrated in the regions (primarily in Alaska and the 11 Western States) that have either supplied much of our past and current domestic mineral production or are considered to hold the greatest promise for future domestic mineral discoveries, or both. Yet increasingly large amounts of the Federal land are being withdrawn from availability for mineral activity, or otherwise highly restricted, to protect both mineral and nonmineral resource uses and activities that Congress or the executive branch believes are inadequately protected under the existing Federal mineral disposal laws. These laws, enacted in piecemeal fashion over more than a century, contain significant gaps in coverage, result in unnecessary expenses for mineral explorers and miners and needless damage to nonmineral resources, do not assure secure tenure or diligent mineral activity, and do not provide incentives or other mechanisms for balancing of mineral and nonmineral resource values at each stage of mineral activity. Changes in the laws to resolve some of these problems may lead to more efficient mineral activity on nonwithdrawn land and to a halt in or even reversal of the present trend of increasingly large withdrawals. This trend has made it more and more difficult to explore for and develop minerals on Federal land. It may have serious adverse consequences on the domestic mineral industry and, after a deceptive lag of 10 to 20 years (during which time currently known and available mineral deposits are brought into production, but few new deposits are discovered and developed for eventual production), on the U.S. mineral posture in an increasingly tight international minerals environment,

This study was initiated and developed in response to several related requests, Senator Ted Stevens, a member of the Technology Assessment Board, asked the Office of Technology Assessment (OTA) to assess "the crucial factors, including land use, environmental and transportation policies, as they determine the accessibility to domestic mineral resources," and "the likely economic, social, environmental and other impacts of various policy alternatives designed to increase domestic mineral productivity." Related broad issues of energy and materials supply and use were raised in a request submitted by the Chairman and the Ranking Minority Member of the House Committee on Science and Technology. Representative Morris K. Udall, another member of the Technology Assessment Board and (then) Chairman of the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs (now Chairman of the full committee), requested a study or studies of various natural resource issues as a beginning on an assessment of national growth policy. Representative Udall's request called for a study of resource management policies for land, water, and fuel and nonfuel minerals to: 1) analyze and identify any shortcomings in existing policies and practices, including those involved in choosing between alternative or conflicting uses of natural resources, particularly mineral and non-mineral land uses: 2) critically evaluate and extend prior analyses of these issues to

develop a broader analytical framework; and 3) present options for the improvement and coordination of the policies and practices of Federal, State, and local governments in these areas. The study plan, as developed in response to the previously described requests, was supported by a request from the Senate Committee on Interior and Insular Affairs (now the Committee on Energy and Natural Resources). Subsequently, the Senate Committee on Governmental Affairs requested and received a brief interim analysis of the effects of the proposed Department of Energy Organization Act on Federal land management.

The requests covered a very large number of issues. In order to confine the study to manageable scope, while still addressing the principal concerns of the requesters, the study was defined as an analysis of the Federal land management laws and practices that govern exploration for and development and production of fuel and nonfuel minerals in Federal onshore land, exclusive of Indian lands, and the interaction of the Federal laws and practices with State and local controls and payment requirements. Above all, this study addresses the problems associated with establishing efficient and equitable mineral land management to: 1) facilitate the identification, development, and production of the mineral resources in Federal onshore land, 2) do so in an environmentally and socially acceptable manner, and 3) accommodate demands for non-mineral resource uses on such land through provision, as appropriate, for simultaneous, sequential, or dedicated use. The rationale for and the implications of this particular focus of the study are discussed in chapter 1.

This executive summary first sketches the important role Federal onshore land plays in the provision of both minerals and nonmineral resources to the people of the United States. Next, there is a brief description of the stages of mineral activity and the role of the various participants at each stage, followed by an outline of the history and main elements of the Federal laws governing mineral activities on Federal onshore land. Finally, specific issues and options are presented in each of three major areas of concern: 1) the coordination of mineral activities undertaken by different individuals and firms, 2) the coordination of mineral activities with nonmineral activities and values, and 3) the coordination of regulatory and payment requirements imposed on mineral activities by different agencies of the Federal Government and by the different levels of government (Federal, State, and local) in our federal system.

B. The Importance of the Mineral and Nonmineral Resources on Federal Onshore Land

1. Mineral Resources

An adequate, reliable supply of minerals is essential to the economy and security of the United States. Mineral materials are the foundation of industrial society. They provide the physical basis for almost all activities of U.S. citizens. Domestic (United States) consumption of newly mined minerals in 1976 was almost 40,000 pounds, or 20 tons, per person.

An important source of U.S. mineral supply is production from domestic mineral deposits. The demand for newly mined minerals can be reduced, but not eliminated, by conservation, recycling, reuse, and substitution of minerals and mineral products and by changes in consumer buying habits. Although imports can satisfy an important part of the demand, they may make the United States vulnerable to economic and political decisions or events in the foreign producing countries. Even when imports are secure, they may contribute to serious balance-of-trade problems. Moreover, a significant portion of our national economic activity and employment, particularly in certain regions, is based on the mineral-producing sectors. The Bureau of Mines estimated that materials with a value of approximately \$200 billion were processed in 1978 from \$20 billion of domestically produced nonfuel minerals, \$4 billion of reclaimed scrap, and \$3 billion of imported nonfuel minerals, and that an additional \$19 billion of processed materials were imported. Roughly \$58 billion of domestically produced fuel minerals and \$40 billion of imported fuel minerals and refined petroleum products were consumed. These raw and processed mineral materials are indispensable to our \$2 trillion industrial economy,

Onshore land either presently owned by the Federal Government or obtained from the Federal Government by private parties under the Federal mineral laws is one of the more important sources of domestic mineral resources. The Federal Government owns about 30 percent of the onshore land in the United States. Moreover, the Federal land is concentrated in the areas considered to be most favorable for the occurrence of economic mineralization. Most domestic nonfuel mineral production has come from Federal land areas, which contain the bulk of the known domestic resources of a majority of the metallic minerals. They also contain major resources of coal, oil shale, geothermal steam, and uranium, in addition to proportionally smaller, but nevertheless significant, resources of oil and gas. (Much larger resources of oil and gas may be found in Federal offshore land.) The role of Federal onshore land in the production of essential mineral commodities is analyzed in section B of chapter 2 and appendix A. All the available data indicate that it is clearly in the national interest to consider carefully opportunities for the identification and production of the mineral resources in Federal onshore land.

2. Nonmineral Resources

Federal onshore land contains not only minerals, but valuable nonmineral resources, both commercial (e.g., timber, forage, and water) and noncommercial (e.g., nongame wildlife, archeologic sites, scenic landforms, parks, and wilderness). Initially as a result of historical accident and subsequently by design, the Federal Government became the owner (in trust for the public) of the Nation's most important and unique nonmineral resources, particularly the noncommercial ones. The Government's holdings of such resources are now among the most significant in the world.

C. Mineral Exploration, Development, and Production: Stages and Participants (Chapter 2)

1. Stages

“Mineral exploration“ is the process of identifying and investigating “targets” in order to discover an economic mineral deposit. “Development” is the work required to prepare a deposit, once discovered, for production. “Production” is the actual mining, processing, and shipment of the mineral or ore. The final offsite conversion of minerals to a form sufficiently pure for industrial purposes through refining, smelting, and similar processes is excluded from the study.

In general, each stage of mineral activity, from initial geologic reconnaissance of large areas (i.e., hundreds and even thousands of square miles) to actual production, involves applying successively more discriminating and more expensive techniques and heavier equipment to successively smaller land areas (eventually a few square miles or less). The small areas are subjected to detailed surface investigation and three-dimensional physical sampling (e. g., drilling) to determine if they actually contain an economic mineral deposit. If such a deposit is found, it and the immediately surrounding land, as required, are developed for production.

2. Participants

The backbone of the mineral industry in the 19th century was the large number of individual prospectors and employees of small mining companies who found and worked high-grade deposits that were discoverable through examination of the surface of the land. Major deposits were usually syndicated or turned over to larger firms for development and production. Well into the 20th century, individuals using conventional prospecting techniques continued to discover a large proportion of the economic mineral deposits, although development and production (which involved greater costs and more complex technology) became more and more the province of larger firms.

Data on current exploration and mining activities, however, show that the roles of the individual prospector and the small firm have declined sharply in recent years because of the low-grade or hidden character of most of the remaining undiscovered deposits in the onshore United States. The discovery and development of these lower grade or hidden deposits require advanced technology, multidisciplined staffs, and large expenditures. The available data indicate that, with some exceptions, individual prospectors and small firms no longer make discoveries of significant commercial mineral deposits. The available data also suggest, although less clearly, that they do not often identify or delineate the targets that the larger firms then investigate for an economic deposit. Most individual prospectors stake out claims on land that might be mineralized, investigate the surface more or less diligently within the limits of their funding and expertise, and try to get the larger firms to perform detailed exploration of the claimed area. The larger firms form the geologic models, identify the targets, and discover, develop, and produce the deposits.

Some individual prospectors and small exploration firms provide technical and consultant services to or perform contract or “farm out” work for the larger firms, or occasionally initiate their own projects with financing from the larger firms or from local investors. A more independent role is played by small firms in the development and production stages. Small production firms account for all or much of the production of some of the more common minerals. They operate, according to one survey, over 75 percent of all mines, and they account for 5 percent of the total value of U.S. production. The small mines are important sources of local employment and of production of smaller deposits.

D. History and Main Elements of the Existing Federal Onshore Mineral Laws (Chapter 3)

1. The Mining Law of 1872

During the 19th century, settlement of the public domain (the vast Federal territorial lands) was encouraged by enactment of laws providing for free, or almost free, disposal of the public domain to individuals and firms for mining, logging, farming, ranching, irrigation, railroad, and other purposes.

The Mining Law of 1872 was enacted during this period. It originally governed the disposal of all minerals other than coal on the public domain. It still authorizes any person to enter on the public domain to explore for and mine valuable deposits of almost all the non fuel minerals.

Rights are acquired under the Mining Law by actual discovery of a “valuable mineral deposit” and physical “location” (staking) of a mining claim encompassing the deposit. Claims may be located on any public domain land that has not been withdrawn from the operation of the Mining Law. No permission need be obtained from nor notification given to the Federal landowner prior to locating a claim. Each claim is limited in size to about 20 acres, but a person can locate as many claims as he wants. A valid discovery must be made on each claim. If a discovery is made, the claimant can acquire ownership of the surface as well as the minerals by performing at least \$500 worth of mineral development work, complying with lengthy and sometimes expensive application procedures, and paying \$2.50 or \$5 per acre, depending on the type of claim, for a title document known as a “patent.” The claimant can mine without obtaining a patent, in which case there is no charge by the Government for the extraction of the minerals or the use of the surface. (There is, as for any other business, a multiplicity of Federal and State taxes (see chapter 6, section E for a discussion of the State taxes).)

Under the literal language of the Mining Law, discovery must precede location of the claim. However, the courts have created the *pedis possessio* doctrine, which permits location of a claim prior to discovery and protects the locator against encroachment by other miners as long as he is in actual possession of the claim and diligently exploring for minerals. The doctrine applies separately to each claim in a group of

claims; it protects only those claims actually being occupied and worked. Moreover, it does not protect the explorer from an ouster by the Government, through the process of land withdrawals.

An unpatented mining claim must be maintained by the performance of at least \$100 worth of "assessment" (development) work each year (in practice, a commercial mineral developer will often spend much more than the minimum statutory amount). Assessment work can be combined for groups of claims in common ownership, if the work benefits all the claims in the group. There are no assessment work requirements for patented claims. Both patented and unpatented claims continue indefinitely with or without mineral production.

The Mining Law authorizes the States where the Mining Law applies to prescribe procedures for locating and recording mining claims, to specify the amount of annual assessment work required above the \$100 per claim minimum, and even to establish rules for working mines on patented claims necessary for their complete development. Generally, the States have only specified procedures for locating and recording claims. The Federal Land Policy and Management Act of 1976 requires, for the first time, that information about the original location and subsequent holding of unpatented claims be recorded with the Federal land manager as well as with the States.

2. The Mineral Leasing Act of 1920 and Related Leasing Laws

Early in the 20th century, as a result of public concern over monopolization and depletion of mineral and nonmineral resources on the Federal lands, certain resources began to be reserved from disposal. National forest reserves were created to protect timber and watersheds; national parks were created to preserve scenic, recreational and wildlife values; and naval petroleum reserves were created to maintain a secure source of oil and gas for the national defense. Similarly, the fossil fuel, fertilizer, and chemical minerals and the land containing them were reserved from disposal under the Mining Law and made subject to leasing at the discretion of the Secretary of the Interior under the Mineral Leasing Act of 1920 and related statutes.

The Mineral Leasing Act of 1920 was a major departure from the earlier policy for disposal of Federal minerals. The absolute right to enter, locate, develop, mine, and (if desired) purchase mineral land under the Mining Law and the Coal Act of 1873 was replaced, for land containing the fossil fuel, fertilizer, and chemical minerals, with a discretionary permit and leasing system. The Secretary of the Interior was authorized to issue prospecting permits and leases for exploration for and development and production of such minerals and, within broad statutory limits, to establish rentals, royalties, and other conditions to ensure competition, diligent development, the highest use of the land, and payment to the public for the appropriation of its mineral resources,

The Mineral Leasing Act has been amended numerous times since its initial passage in 1920, especially with respect to oil and gas. However, its fundamental structure and purposes remain unaltered. Achievement of these purposes has been impeded by shortcomings in the Act itself and in its administration.

Subsequently, additional laws were passed (or executive actions taken) reserving more lands from disposal under the Mining Law and the nonmineral land laws. Minerals on some of these lands were made subject to lease under special leasing laws. Separate laws were also passed authorizing leasing of some or all minerals on various tracts of Federal land acquired for special purposes outside the public domain. Eventually, all the remaining public domain was reserved from disposal under the homestead and other nonmineral land laws, although much of the public domain continues to be subject to disposal under the Mining Law.

3. Sale of Common-Variety Minerals

Common varieties of sand, stone, gravel, pumice, pumicite, or cinders were removed from location under the Mining Law and, together with common varieties of clay and other mineral materials, made subject to disposal (the minerals only, not the surface) through competitive bidding by the Surface Resources Act of 1955. If the land involved has been withdrawn for the use of a Federal department or agency, or a State or local government, no disposal may be made without the consent of that governmental unit.

E. Issues and Options

The remainder of this executive summary summarizes the material in chapters 4, 5, and 6 on issues and options for facilitating the identification, development, and production of mineral resources on Federal onshore land, while accommodating demands for nonmineral resource uses on such land through provision, as appropriate, for simultaneous, sequential, or dedicated use.

The discussion here, as in the chapters, is divided into three major areas: 1) coordination of mineral activities undertaken by different individuals and firms (chapter 4), 2) coordination of mineral activities with nonmineral activities and values [chapter 5), and 3) coordination of regulatory and payment requirements imposed on mineral activities by different agencies of the Federal Government and by the different levels of government (Federal, State, and local) in our federal system (chapter 6). Within each of these three areas of concern, options are presented in ascending degree of the amount and character of change involved when compared with the existing distinct systems: 1) no changes at all, 2) moderate adjustments to the existing distinct systems, 3) major adjustments to the existing distinct systems, and 4) for the first two areas of concern only, adoption of a comprehensive new approach. In each option other than the “no change” options, an attempt is made to eliminate unnecessary or duplicative regulations, to address questions of efficiency and equity in other regulations, and, where it seems appropriate, to replace regulatory restrictions with more flexible payment requirements or incentives. The options include changes in the Federal mineral land laws only. More general options, such as changes in Federal tax, trade and environmental laws that would address some of the issues raised in this study from a global perspective rather than as a special issue for Federal mineral land management, are beyond the scope of this study.

The identically numbered options, other than the “no change” options, for the three areas of concern are merged in table 1 at the end of this executive summary. The advantages and disadvantages of the elements of the options are discussed in greater detail in chapters 4, 5, and 6. Many of the elements are controversial; some are highly controversial. This report has not examined in depth the entire range of impacts that would be expected from the implementation of the options presented below.

F. Issues and Options Related to Coordination of Mineral Activities Undertaken by Different Individuals and Firms (Chapter 4)

Option 1. The Existing Systems (“No Change” Option)

The existing laws that govern mineral activities on Federal onshore land were enacted over more than a century. Different provisions within the same law or in different laws were enacted for land in different States, for land acquired by different methods, for different minerals, or for different geologic configurations of the same mineral. The resulting collection of laws contains significant gaps in coverage, treats physically similar lands or mineral deposits differently, and otherwise makes distinctions that often seem arbitrary or are difficult to apply.

The patchwork of existing mineral laws creates legal and practical barriers to multiple-mineral exploration and development on the same tract of Federal land. It also creates uncertainty about the procedures to be followed to find and develop the growing number of mineral resources, such as zeolites, that cannot easily be classified as being subject to one law or another.

Tenure for mineral activities is uncertain and insecure under each of the existing laws. Under the Mining Law, there is no way to obtain exploration rights secure against the Government even after particular targets have been staked, and the *pedis possessio* doctrine provides only very weak protection against other mineral explorers. Under the leasing and sale laws, exploration rights valid against other mineral explorers and the Government can be obtained, but the granting of such rights is at the complete discretion of the Secretary of the Interior. Development and production rights for all minerals under the Mining Law and for nonfuel minerals under the leasing laws depend on satisfaction of the shifting and uncertain “discovery of a valuable mineral deposit” test,

On the other hand, the existing laws provide very few effective requirements or incentives for diligent exploration, development, or production once mineral rights have been acquired. Speculators or inadequately financed explorers or developers can tie up promising mineral land for many years, often indefinitely, or can burden future mineral activity by retaining overriding royalties although they have done nothing to develop the land. It is difficult, if not impossible, to prove noncompliance with such work requirements as do exist, and the Government may not be able to cancel mineral rights even when noncompliance has been proved. Many of the claim

location and work requirements imposed by the Federal and State governments under the Mining Law do not promote the identification and [development of economic mineral deposits, but rather result in needless damage to the land and expense to the explorer or developer. However, some States have recently changed their discovery work requirements to reduce such needless damage and expense.

The maximum acreage limits on individual mining claims or mineral leases are, in some cases, insufficient for modern mineral projects and techniques. These limits can prevent formation of economic mining units for competitive leasing and can cause unnecessary and unproductive work when the work requirements specified for each claim or lease cannot be aggregated for contiguous claims or leases. Minimum acreage limits either do not exist or are not set high enough to prevent splintering of economic mining units by speculators, making it more difficult to assemble such units, administer the laws, and reduce the anticonservation effect of overriding royalties,

Expense and uncertainty exist under the leasing laws as a result of the blurred distinctions between known and unknown mineral areas. Competitive bonus bidding for known mineral areas places individuals and smaller firms at a disadvantage. Gross royalties inserted in leases for known and unknown mineral areas can result in failure to produce lower grade minerals that otherwise could be efficiently recovered.

Finally, the Mining Law has some outmoded provisions (such as the provisions for extralateral rights and tunnel sites and the distinctions among lode and placer claims and millsites) that create problems for the mineral industry without serving any useful purpose.

Option 2. Moderate Adjustments to the Existing Distinct Systems

Moderate adjustments could be made to some of the existing distinct systems that would eliminate or reduce a good part of the inefficiency and uncertainty that now exist. These adjustments would be “moderate” in the sense that they would not alter the basic character of the present systems. Consequently, they would not affect aspects of a system that are a key part of its structure, nor would they eliminate the gaps and uncertainties that arise from the existence of a number of distinct systems.

For example, the tunnel site, lode versus placer, and extralateral right provisions in the Mining Law could be eliminated. Maximum limits on the size of individual claims under the Mining Law could be replaced with much larger maximum limits on the area that could be treated as a unit for the purpose of satisfying work requirements. Damaging and unproductive claim marking and location requirements could be replaced with filings in the local land office, as is currently the practice under the leasing laws. The existing annual work requirements could be increased slightly each year a claim is held, and work performed in excess of the requirement for a particular year could be “banked” and applied toward requirements in subsequent years. Payments could be allowed in lieu of actual work. Failure to file proof of such work or make payment every year would result in automatic cancellation of the claim. If it is desired to require payments to the Federal Government for production of minerals under the Mining Law, then the payments probably should be structured as a share of net profits

(gross income less expenses and a minimum return on investment) in order to avoid inefficiencies that may result from other types of mineral value payment requirements. It should be noted, however, that payments for mineral value are much less important, from the standpoint of either efficiency or equity, than payments in lieu of work requirements or payments for damage to nonmineral resources.

Similarly, maximum acreage limits could be eliminated from the leasing laws. An escalating, payable, bankable work requirement could be introduced similar to the one outlined above for the Mining Law and already in effect for oil shale and geothermal steam leases. Gross royalties could be replaced by profit-share payments.

Minimum sizes could be specified for claims and leases, and overriding royalties could be eliminated, severely limited, or required to be based on net profits rather than on gross income,

Claims and leases could be terminated automatically after 15 to 20 years if development had not yet been completed—that is, unless there were a well or mine producing or capable of producing. The escalating, payable, bankable work requirement could be replaced, after development had been completed, by a requirement of annual commercial volume production, or payment of an advance royalty on such production in lieu of actual production. The Secretary of the Interior could be authorized to suspend any work or production requirement for good cause shown in a particular case, but might not be allowed to extend the 15- to 20-year period allowed for completion of development.

These adjustments could greatly improve the efficiency of mineral activities. However, substantial problems would remain. For example, the work requirements, although improved, would still be insufficient to ensure diligent mineral activity, and tenure for exploration, development, and production, especially for the nonfuel minerals, would continue to be uncertain and insecure.

Option 3. Major Adjustments to the Existing Distinct Systems

Further adjustments, in addition to those outlined in the previous “moderate adjustments” option, would be necessary to provide for secure tenure and diligent activity under the mining and mineral leasing laws. These adjustments would eliminate or revise major elements of each separate system. However, they would still not eliminate the gaps and uncertainties created by the existence of a number of distinct systems.

Secure exploration rights could be created under the Mining Law by granting to each claimant an exclusive right to explore, valid against the Government as well as against other explorers, for a 2-year period, perhaps renewable for an additional 2 years for good cause shown. In addition, the “discovery of a valuable mineral deposit” test for acquiring and maintaining development and production tenure could be eliminated. Any explorer willing and able to begin substantial development activity upon termination of the exploration period would automatically be granted tenure for development and production. Alternatively, development and production tenure could be granted initially along with the exploration tenure, subject to the condition that exploration be completed within 2 (perhaps extendable to 4) years. Either way, the

tenure package would be subject to the work requirements and time limits on development, and the produce-or-pay conditions on production, outlined above in the “moderate adjustments” option. Moreover, to prevent speculation in and tying up of mineral land, the escalating annual work requirements would be applied to exploration as well as development and increased to a level comparable to actual expenditures on good faith exploration and development. (The annual work requirements could be either uniform requirements revised periodically on the basis of reported expenditures on actual projects, or ad hoc negotiated requirements built into a “development contract.”)

Patents (ownership documents) would continue to be granted under the Mining Law, but only after commencement of development. To prevent abuse of the liberalized tenure provisions, a patent would grant ownership of the minerals only, not the surface. Use of the surface, for mining-related purposes only, could be allowed upon payment of an appropriate rental. The mineral ownership would revert to the Government if the annual work or production requirements were not satisfied or if the surface were used for nonmineral purposes.

Similar adjustments could be made under the leasing laws. The “discovery of a valuable mineral deposit” test for acquiring development and production tenure for nonfuel minerals under the leasing laws could be replaced by automatic grants of such tenure, as outlined immediately above for the Mining Law, and subject to the same work requirements, time limits, and conditions. These work requirements, time limits, and conditions could also replace similar but less effective provisions currently applicable to the tenure granted for exploration for and development and production of the fuel minerals under the leasing laws. Again, the escalating work requirements would have to be increased to a level comparable to actual expenditures on good faith exploration and development in order to avoid speculation in and tying up of mineral land.

Finally, the distinction between known and unknown mineral areas could be eliminated from the leasing laws and avoided under the Mining law, since (a) profit-share mineral value payments should satisfy those who believe that the Government should receive payment for its mineral resources, (b) the substantial escalating work requirements should deter speculation, and (c) the elimination or restriction of overriding royalties should also deter speculation and minimize burdens on production resulting from such speculation. Competitive bidding or a lottery could be reserved for those situations where more than one person filed a claim or applied for a lease for the same tract of land during, for example, any 10-day period.

As is discussed below, several of these major adjustments would eliminate some of the strongest protections of nonmineral values that now exist under the mining and mineral leasing laws (e. g., the “discovery of a valuable mineral deposit” test for acquiring development and production tenure under the mining and mineral leasing laws and the ability to withdraw claimed land from continued exploration under the Mining Law). Therefore, it is doubtful that these adjustments could be made without also making other changes to ensure proper balancing of mineral and nonmineral resource values. (See option 4 immediately below and option 3 in section G.)

Option 4a. Replacement of the Existing Distinct Systems With a Comprehensive System for All Minerals

If all the moderate and major adjustments listed above were made to the existing distinct systems, the various systems would be practically identical in structure, requirements, and effects, and there would be little reason for continuing the distinctions among minerals and lands covered by the systems.

Thus, the confusion and costs involved in applying the lines that separate the systems, and the impediments to efficient multiple-mineral operations inherent in such line-drawing, could be eliminated by combining all minerals and lands under one comprehensive system [either location, leasing, or some other system). A claim or lease under this comprehensive system would grant exclusive rights for all minerals.

The major remaining obstacle to such a comprehensive system would be the theoretical distinction between a miner's absolute right of access under the Mining Law and his access subject to the discretion of the Secretary of the Interior under the leasing and sale laws. But the "absolute" right of access under the Mining Law can be and increasingly has been blocked or restricted through land withdrawals or through delays or restrictions on rights-of-way or other land use permits. Withdrawals can now be made at any point during exploration under the Mining Law, so that exploration access and tenure are even more uncertain under the Mining Law than they are under the leasing and sale laws. One of the major adjustments to the Mining Law listed above would provide for exploration tenure secure against such land withdrawals. But it is doubtful that such an adjustment could be made without eliminating the absolute right of access, unless better provisions for coordinating mineral and nonmineral activities were also adopted. If such better provisions were available, they could be applied also to the leasing and sale laws in order to reduce the need for Secretarial discretion over access under those laws.

In sum, the need (or lack of need) for Secretarial discretion over access is the same under each of the adjusted distinct systems, and the resolution of the discretion issue should be the same for each distinct system, or for any comprehensive system replacing the distinct systems. In other words, the discretion issue should not deter consideration of adopting a comprehensive new system.

Option 4b. Partial Replacement of the Existing Distinct Systems With a Comprehensive System for Nonfuel Minerals Only

For a number of reasons, it might be considered desirable to exclude the fuel minerals (except perhaps uranium) from a comprehensive system like the one described above.

First, Congress has given considerable attention to the laws governing some of the fuel minerals—oil, gas, geothermal steam, and coal. Congress might not want to alter laws in which it had already invested so much effort, even though those laws contain many defects in common with the systems governing nonfuel minerals. This is actually an argument against making any adjustments at all to the fuel mineral leasing systems,

rather than an argument against including them, once adjusted, in a comprehensive system.

Second, it would be difficult to define the Department of Energy's proper role, under its recently granted authority over some aspects of fuel mineral leasing, in a comprehensive system that combined all minerals under each claim or lease. This difficulty would be eliminated if, as is suggested (on other grounds) in the third option in section H, the Department of Energy's authority over fuel mineral leasing were revised or revoked.

Third, there are large, known, untapped resources of some fuel minerals—e.g., coal and oil shale. It has been argued that greater control should be exercised over these fuel minerals in order to prevent premature or speculative leasing and undesirable cumulative damage to the physical and socioeconomic environments. But such control would clearly be available under a comprehensive all-mineral system that made access subject to the discretion of the Secretary of the Interior. Even under a system of nondiscretionary access, these concerns could be handled adequately by appropriate diligence, payment, nonmineral resource protection, and socioeconomic impact provisions in an all-mineral system.

G. Issues and Options Related to Coordination of Mineral Activities With Nonmineral Activities (Chapter 5)

Option 1. The Existing Systems ("No Change" Option)

The existing laws treat mineral exploration, development, and production as distinct activities outside the mainstream of the land use planning and management process for Federal onshore land, even though mineral and nonmineral resource uses are unavoidably intertwined. These laws reflect the belief that mineral production is the best use of any tract of land and thus make mineral activity the preferred use on any Federal land that is open to such activity. Except for recent enactments governing coal, the laws contain no explicit procedures for coordinating mineral activities with nonmineral activities.

Regulations have been promulgated under the mining and mineral leasing laws to control the impacts of mineral activities on surface resources. These regulations are couched in broad language and do not contest the miner's preferred right to explore for and develop the minerals in a tract. The regulations are not tailored to varying land characteristics. They do not attempt to control the method of development, but rather seek to mitigate its impact on surface resources by relying on negotiated approval of operating plans.

The regulations applicable to activities under the Mining Law do not cover most Federal land. They do not apply to unpatented mining claims outside the national forests or to patented mining claims outside the national parks or wilderness areas. The Forest Service regulations, which were adopted in 1974 against a background of uncertainty about the extent of the Forest Service's authority to control the impacts of

Mining Law activities, have minimal sanctions, do not require filing of notices of activity by most mineral explorers, and are sometimes hesitantly enforced. However, the Forest Service has imposed and enforced strict surface protection requirements in certain areas.

Many provisions in the Mining Law result in unnecessary damage to surface resources and disruption of surface use and management. For example, the Federal and State claim marking and work requirements (including State discovery work requirements and Federal *pedis possessio* and assessment work requirements) require a mineral explorer to disturb the surface without any benefit necessarily being obtained in terms of efficient or diligent mineral activity. The *pedis possessio* requirements also encourage mineral explorers to attempt to prevent use of the surface by others. The irregular shapes of claims, coupled with the miner's right to acquire title to the surface as well as to the minerals, lead to a jigsaw pattern of surface ownership that can frustrate efficient planning and management of surface use. Federal land use planning and management are further inhibited by the knowledge that any plan or use can be preempted at any time by mineral activities under the Mining Law, unless the land is withdrawn from mineral entry, or even by nonmineral activities on a nearby patented claim. Medium- or long-range land use planning is similarly inhibited under the mineral leasing laws when leases are issued or can be renewed for indefinite periods without any production.

On the other hand, because the regulatory controls on mineral activities under the existing laws, although generally weak, are broadly worded and applied in an ad hoc manner to specific mineral projects, they can create considerable uncertainty with respect to the requirements that will actually be imposed on a particular project. Technically, the controls cannot go beyond the restrictions expressed or implied in the governing regulations (or lease), and they cannot substantially interfere with the miner's right to develop the mineral deposit as he sees fit. But the broad wording of the regulations, together with the miner's desire to avoid the delays involved in administrative or judicial appeals, give the responsible Federal officer considerable leverage to impose substantial restrictions on mineral activities. Furthermore, strict conditions can be imposed on nonfuel mineral projects under the mineral leasing laws after exploration and before development, even if such conditions would make development and production uneconomic, since a lease is required for development and production after successful exploration under a prospecting permit.

Additional uncertainty with respect to mineral tenure results from the use of the "discovery of a valuable mineral deposit" test for acquiring development and production rights to any mineral under the Mining Law and to nonfuel minerals under the mineral leasing laws. Under the present interpretation of the test, nonmineral values are not balanced directly against mineral values in order to decide whether mineral development and production rights should be granted, although such a comparative value test has been used in the past and could enjoy a resurgence. However, some nonmineral values are considered indirectly to the extent that regulations protecting such values impose costs on the miner. Such costs are included in an increasingly comprehensive definition of the considerations a prudent miner would take into account in deciding whether a mineral deposit is valuable. This indirect approach must

necessarily leave out a fairly large range of nonmineral values. Thus it does not go far enough, in the opinion of surface resource users. On the other hand, miners believe that it goes too far in second-guessing their profitability calculations and exposing them to the danger of losing tenure after considerable effort has been spent on exploration.

Activities under the mining and mineral leasing laws are subject to Federal and State air quality, toxic substances control, and other environmental laws of a general nature that impose stringent requirements for mitigation of certain impacts resulting from mineral activity. However, these general environmental laws do not reach the central issues of land resource allocation and use that are at the core of today's debate over Federal mineral land management,

The existing laws require very few payments for damage to or appropriation of nonmineral resources. Nominal payments of \$2.50 or \$5 per acre are required to obtain title to the surface under the Mining Law, and nominal annual rentals of only \$0.25 to \$2 per acre are required under the mineral leasing laws. In addition, bonds to ensure reclamation, if feasible, and payments for damages to privately owned crops, agricultural improvements, and grazing values may be required. These payment requirements are not sufficient to ensure proper balancing of mineral and nonmineral resource values.

The lack of adequate regulatory or payment mechanisms under the existing laws has been partially responsible for the withdrawal of increasing amounts of Federal land from the operation of the mining and mineral leasing laws in recent years. Formal withdrawals of land from the operation of the Mining Law have been almost double those under the mineral leasing laws, if only normal withdrawals are taken into account (that is, omitting the unique situation created by the Alaska Native Claims Settlement Act). (See chapter 5, section G for the calculations and analysis.) This is because initial access to land for mineral activities under the Mining Law is a statutory right that can be blocked only by withdrawals, while initial access under the mineral leasing laws is at the discretion of the Secretary of the Interior, who can block access by refusals to lease as well as by formal withdrawals. The amount of land either formally withdrawn or highly restricted (for example, by policies that discourage leasing or issuance of necessary rights-of-way) is approximately the same for the Mining Law and the mineral leasing laws. Withdrawals and antileasing restrictions continue to be made, and are maintained, to protect mineral and nonmineral resource uses and values that Congress or the executive branch believes are inadequately protected by existing regulations and payment requirements. Mineral activity is thereby completely precluded, even though properly restricted mineral activities might be entirely compatible with protection of such uses and values. (An extensive analysis of withdrawals and other restrictions affecting mineral activity in 1975 is contained in appendix B and is summarized in section G of chapter 5.)

Conversely, mineral activity continues to be the preferred use on nonwithdrawn land under the Mining Law and on leased land under the mineral leasing laws. Mineral rights, once acquired, override all nonmineral resource values, regardless of the relative values of the mineral and nonmineral resources. Mineral rights may be acquired

by simply staking out a claim under the Mining Law. Advance notice to or permission from the Federal or private surface owner is not required. The Secretary's discretion to grant access under the mineral leasing laws may be exercised, as it was until very recently, routinely in favor of granting access, with little attention paid to the potential impact on nonmineral resources, except in those few cases where access must also be approved by the Federal agency responsible for management of the surface.

The Mining Law has been abused by persons who are not interested in mineral activity but rather want to make use of or even obtain title to the surface. This abuse has been made possible by the absolute right of entry under the law, the very weak and practically unenforceable controls over diligent activity, and the lack of adequate controls over use of the surface. Even though some actions have been taken to curb this abuse, such as removing common-variety minerals from location under the Mining Law and requiring all claims to be recorded at the Federal land office, some abuse remains because of the underlying difficulties with enforcing provisions of the Mining Law.

Option 2. Moderate Adjustments to the Existing Distinct Systems

Almost all the moderate adjustments discussed in option 2 in section F, dealing with improved coordination of mineral activities undertaken by different individuals and firms, could also improve coordination of mineral activities with nonmineral activities.

For example, unnecessary surface damage, jigsaw land use patterns, and uncertainty about land status are caused by existing Federal and State claim location and marking requirements under the Mining Law. These problems could be greatly reduced by replacing the physical location procedures with filings in the local Federal land office according to subdivisions of the public land surveys. For unsurveyed land, claims could be required to be rectangular in shape, oriented north-south or east-west, and depicted and described (through reference to permanent physical features) on the best available map of the area. A survey of the claim could be required as a precondition to development. The surface damage attributable to unproductive pedis possessio and assessment work requirements under the Mining Law could be reduced by replacing the maximum size limits on individual claims with generous limits on the size of an area that could be treated as a unit for the purpose of satisfying work requirements, and by allowing payments in lieu of actual work and "banking" of excess work. Payments for mineral value comparable in magnitude to those required by non-Federal landowners could be instituted to avoid possible underpricing and inefficient use of Federal land.

Similar adjustments, also described in option 2 in section F, could be made to maximum acreage limits, work requirements, and payments for mineral value under the mineral leasing laws.

The remaining adjustments outlined in option 2 in section F, such as minimum sizes for mining claims and mineral leases, time limits on development tenure, and produce-or-pay conditions on production tenure, would make it easier to keep track of

land status and would prevent land from being held indefinitely without any development or production.

Other adjustments could also be made that would improve coordination of mineral and nonmineral activities without making major changes in the existing systems. For example, the existing requirement of consent by the surface management agency to issuance of leases for certain minerals on certain lands could be extended to leases for all minerals on all lands, (The requirement would not apply to mining claims under the Mining Law.) Ad hoc, broadly worded surface use regulations, similar to those now in existence for some mining claims and all leases, could be applied across the board to mineral activities on all lands under all the Federal mineral laws. Such regulations could include a prohibition on any residential use of the surface of a mining claim or mineral lease without permission from the surface management agency or surface owner. No surface-disturbing mineral activity could proceed without first filing a notice of intent with the surface management agency or surface owner.

These adjustments would eliminate or revise many regulations that cause needless and unproductive expense to the mineral explorer or miner and unnecessary adverse impacts on nonmineral resources, particularly under the Mining Law. They would also reduce some of the uncertainty over land use management and planning under the existing systems, by placing some diligence-related conditions on the duration of mineral tenure and by making all mineral activities subject to Forest Service type regulations requiring limited mitigation of impacts on surface resources.

However, the adjustments would not resolve the most serious problems involved in coordinating mineral activities with nonmineral activities under the existing systems. On the one hand, they would not reduce miners' uncertainty about nonmineral resource-related controls over mineral access and tenure. On the other hand, they would not affect any person's absolute right to locate mining claims on any nonwithdrawn area of the public domain, and to obtain ownership of the surface as well as the minerals upon discovery of a valuable mineral deposit. Nor would they affect the absolute preference given to mineral activity on any land covered by a mining claim or mineral lease. Mineral rights, once acquired, would continue to override all nonmineral resource values. Thus, the adjustments would not significantly reduce the pressure for withdrawals of land from mineral activity in order to protect mineral and nonmineral resource values.

Some additional moderate adjustments could be made to lessen slightly the adverse effect that withdrawals have on mineral availability. Stale withdrawals no longer needed to protect nonmineral resource values could be identified and eliminated through a better withdrawal review program. Or, if such a program would be impractical because of the poor condition of land records, a fresh start could be made by terminating all withdrawals, except those made by Congress, that are not confirmed by the responsible agency within a certain number of years—a sort of re-recording requirement for withdrawals analogous to the recording requirement for mining claims. But, the latter approach would run the risk of inadvertently leaving important nonmineral resources unprotected.

In addition, some continuing mineral appraisal activity on withdrawn lands could be provided through a specific Government program for periodic assessment of the mineral resource potential of such lands. The program might include detailed Government exploration and evaluation where needed to decide whether certain withdrawn land should be reopened to private mineral activity.

Option 3. Major Adjustments to the Existing Distinct Systems

Several of the most serious problems involved in coordinating mineral activities with nonmineral activities under the existing systems would be eliminated by the major adjustments described in option 3 in section F for improved coordination of mineral activities considered by themselves. These include: replacing *pedis possessio* exploration tenure under the Mining Law with a secure, limited-in-duration exploration right; establishing more realistic, flexible, and enforceable work requirements under the mining and mineral leasing laws; eliminating the “discovery of a valuable mineral deposit” test for acquiring development and production tenure under the laws; limiting patents (fee title) under the Mining Law to the minerals in the claimed land, with a right to use the surface for mining-related purposes on payment of rent; and eliminating or restricting overriding royalties.

Two of the above adjustments—the elimination of the “discovery of a valuable mineral deposit” test under the mining and mineral leasing laws and the provision of secure exploration tenure under the Mining Law—would greatly reduce the uncertainty now faced by explorers and miners under the mining and mineral leasing laws. An analogous adjustment would make the “preference right to a lease” for successful prospectors under the mineral leasing laws a clear option exercisable by the prospector, rather than a mere right of first refusal should the Government decide to issue a development-production lease. These adjustments, however, would eliminate some of the most important protections of nonmineral values that now exist. To compensate for the loss of these protections, the statutory right of access under the Mining Law could be converted to access at the discretion of the Secretary of the Interior or the surface management agency, or both, as is now the case under the mineral leasing and sale laws. (Unlike now, the access under each law, once granted, would be secure for exploration, development, and production.) In addition, the surface use regulations under each law could be strengthened. The surface management agencies could be given clear authority to control the surface impacts of mineral activity, including the power to prohibit some or all surface impacts when necessary to protect important surface values. Finally, miners could be required to pay for damage to some publicly owned as well as privately owned surface resources and facilities in order to encourage mineral activity that is efficient from the standpoint of total resource use,

These adjustments could provide for better balancing of mineral and nonmineral resource values than occurs under the existing systems. They would substantially reduce the need to rely on the withdrawal power to protect nonmineral resource values. They would also greatly reduce the uncertainty that currently exists with respect to maintaining exploration tenure under the Mining Law and acquiring development and production tenure for the nonfuel minerals under the mining and mineral leasing laws,

However, there still would be considerable uncertainty about the acquisition of exploration tenure and about the specific nonmineral resource protection requirements that would be applied after tenure is acquired in any particular case. Perhaps these uncertainties could be reduced by guidelines limiting the Government's discretion over access and over specification of nonmineral resource protection requirements after access is granted. But excessively restrictive guidelines would not adequately protect nonmineral resource values, given the current broad nature of nonmineral resource protection requirements.

Option 4. A Shift to Integrated Mineral and Nonmineral Resource Management

The adjustments listed in the two preceding options do not resolve the fundamental dilemma of how to provide for open access to and secure tenure on Federal land for private mineral exploration, development, and production while also assuring proper balancing of mineral and nonmineral resource values during each stage of mineral activity (see chapter 5, subsection C(4)).

One approach that might go a long way toward resolving this fundamental dilemma would build on the emerging practice under the mineral leasing laws of basing surface use restrictions on analysis of the land types and land use characteristics of particular areas. In certain instances, these area-specific restrictions have been developed and promulgated as part of the normal land use planning process.

Surface use restrictions tied to land classifications established by the surface management agencies as part of their normal land use planning process might provide greater assurance of adequate protection of nonmineral resource values on Federal land, since such restrictions could vary for different areas to take account of the vast differences in surface values and their sensitivity to disruption from mining. Because the restrictions would be much more specific and localized and would be published in advance in the land use plan for an area, they should also greatly reduce mineral explorers' and producers' uncertainty about the surface use conditions applicable to the various stages and types of mineral activity in the area.

If specific restrictions tied to land types and values in an area could be devised and promulgated as part of the normal land use planning process, and if such restrictions were adequate to protect the important nonmineral resource values in the area, there should be much less pressure for withdrawal of land from mineral activity. Moreover, there would be much less need for making the acquisition of mineral rights depend on the discretion of the Secretary of the Interior or the surface management agency. Once the new system was firmly in place, access to Federal land under the mineral laws could be made nondiscretionary, and many, if not all, of the existing withdrawals perhaps could be revoked. Access to certain areas might still be very highly restricted in order to protect very important nonmineral resource values, but it would not be completely precluded.

A surface use restriction might be too protective for the less unusual nonmineral resource values, because the restriction could not be violated no matter how valuable or potentially valuable the mineral resources in an area might be. This problem can be

overcome, in part, by relaxing the restrictions that protect these less unusual non-mineral resource values as mineral activity successfully progresses from exploration through production. For example, there might be severe limits on or even prohibitions against roadbuilding or other types of surface disturbance in certain areas during exploration, which would be relaxed or eliminated for development and production.

For the easier-to-value nonmineral resources, surface use restrictions might be replaced entirely by compensation requirements. A schedule of payments could be developed along with the surface use restrictions as part of the land use planning process for an area, with some nonmineral resource values being absolutely protected through restrictions and others being conditionally protected through compensation requirements. The individual explorer or miner could decide on his own whether the potential mineral values were worth the cost of paying for damage to the conditionally protected nonmineral resource values, and he could structure his project to minimize such required compensation by minimizing the damage.

In sum, this option would (a) replace the existing open-ended and broadly worded surface use regulations promulgated primarily at the national level with much more specific and predictable conditions tied to land types and uses at the local level, (b) substitute flexible charges for absolute restrictions where appropriate, and (c) ensure open access and secure tenure once such conditions and charges were firmly in place.

H. Issues and Options Related to Coordination of Federal, State, and Local Controls and Payment Requirements (Chapter 6)

Option 1. The Existing Systems (“No Change” Option).

The institutional setting of Federal onshore mineral land management—that is, the division of authority horizontally among the Federal agencies and vertically between the Federal and State governments—is as critical as the substantive content of the laws. The historical development of the mineral laws and their administration has resulted in coordination difficulties along both dimensions.

Along the horizontal dimension, the traditional separation of mineral resource disposal and management from multiple-use management of nonmineral resources under the Federal land laws has been carried over into the administration of the mineral laws themselves. The mineral disposal and management function has been lodged in two agencies in the Department of the Interior. It has thereby been separated from the management of the various nonmineral resources by surface management agencies such as the Forest Service and the Fish and Wildlife Service. Furthermore, the mineral leasing function entrusted to the Department of the Interior has itself been split into mineral (economic and engineering) aspects and nonmineral (surface impacts) aspects, with responsibility for mineral aspects given to the U.S. Geological Survey (USGS) and responsibility for nonmineral aspects given to the Bureau of Land Management (BLM). The new Office of Surface Mining has a significant role in both the mineral and non-mineral aspects of coal mining operations. BLM is solely responsible for the mineral

aspects of Mining Law activities, but it shares responsibility with some surface management agencies for the nonmineral aspects.

Because minerals are bound up in the land, mineral resource management invariably affects nonmineral resource management, and nonmineral resource management often affects mineral resource management. During the era of extensive land disposal, these interrelationships were not of serious concern to most people. Given the current policy of retention and multiple-use management of Federal land, however, the formal separation of mineral resource management from nonmineral resource management and the formal distinction between “economic” (mineral-related) and “multiple-use” (nonmineral-related) aspects of mineral management itself quickly break down in practice, causing substantial coordination problems and preventing integrated management of Federal land resources.

These problems have been perceived by USGS and BLM, which have moved to joint responsibility for many aspects of mineral leasing on land under BLM’s jurisdiction, despite the formally mandated separation of functions. However, during the creation of the Department of Energy (DOE) by a new administration, the artificial distinction between “economic” and “multiple-use land management” aspects of fuel mineral leasing was incorporated in the Department of Energy Organization Act, which transferred the “economic” aspects from the Department of the Interior to DOE. Now, two separate departments, rather than two agencies in the same department, must contend with this distinction and its adverse consequences for integrated land management.

Some recognition of the intimate connection between mineral resource management and overall land management has been provided by the requirement, in all recent mineral leasing laws, that mineral leases may be issued only with the consent of the surface management agency and subject to such conditions as it may include to ensure adequate utilization of the land for the purposes for which it was acquired or is being administered. But this requirement as yet applies to only a few minerals and a few land categories. (Although there is no such formal requirement for land under BLM’s jurisdiction, the same effect is achieved, because BLM is the mineral leasing agent for all Federal land as well as surface manager of its own land.)

The surface management agencies generally are not given any legal role in supervising compliance with surface use restrictions applied to mineral activities, although they have the expertise and are best located to enforce such restrictions. (The principal exception is the Forest Service’s enforcement of surface use restrictions applied to mineral activities under the Mining Law in the national forests.) Enforcement is rather the responsibility of USGS (except for surface impacts of coal mining operations, which are the responsibility of the Office of Surface Mining), which has a mineral-related expertise and mission and often has neither an office near nor familiarity with the area under lease.

Along the vertical dimension of the institutional framework, the coordination problems are even more complex, Mineral activities on Federal land can have substantial effects on local and State economies and ways of life, which under our federal sys-

tern of government are the primary concern and responsibility of local and State governments.

Generally, the existing mineral laws strike a reasonable balance between Federal and State regulatory jurisdiction over private mineral activities on Federal land. The laws explicitly or implicitly allow the States to impose more stringent restrictions than those imposed by the Federal Government, as long as the State restrictions do not conflict with the Federal ones and do not disrupt Federal land management.

There are, however, some problems with respect to State regulation of mineral activities on Federal land. The most obvious are the anachronistic provisions in the Mining Law for (a) State specification of procedures for locating and maintaining claims and (b) State insertion of development conditions in patents. Less obvious, but potentially troublesome, are the provisions in the Surface Mining Control and Reclamation Act of 1977 that (a) allow private owners of the surface overlying Federal coal to veto surface mining of such coal [and hence extract the value of the federally owned coal as well as the value of the privately owned surface as the price for not exercising the veto] and (b) allow the States to take over enforcement of Federal reclamation standards on Federal land (even though many State enforcement programs are underfunded, understaffed, and vulnerable to conflicts of interest).

More serious issues are raised by State taxation of mineral activities on Federal land and by the distribution of Federal revenues generated under the mineral laws.

State severance taxes and other mineral-related taxes based on the gross amount or value of production are in effect gross royalties and can have the adverse anticonservation effects on mineral and nonmineral resources associated with gross royalties. The tax levels in some States are so high that they may prevent mining of some Federal mineral deposits and may cause mining of only the high-grade portions of other deposits. They also may inflate the prices paid by consumers and reduce Federal mineral revenue.

None of the Federal revenues generated under the mineral laws are retained by the Federal agencies administering the laws to pay for the costs of such administration, which is often substantially underfunded. None of the revenues are turned over to the surface management agencies to be used to repair damage to surface resources or to replace resources lost as a result of mineral activities. Only 10 percent of the revenues is retained by the Federal Government to be deposited in the general fund of the Treasury. The remaining 90 percent is channeled by law to the Western States, either directly through payments to the States themselves or indirectly through the Reclamation Fund to subsidize irrigation projects.

The Federal mineral revenues, and additional Federal funds derived from fees imposed on surface coal miners by the Surface Mining Control and Reclamation Act, are turned over to the Western States to enable them to cope with the adverse socioeconomic impacts of mineral activities on Federal land. But the funds are made available without any showing of need, and, in fact, the major mineral-producing States receive more than adequate revenue from State mineral-related taxes to cope with adverse socioeconomic impacts. (Generally, the problem is not insufficient State revenue, but

rather ensuring that such revenue reaches the local unit of government that needs it, in a timely manner.) The Federal revenues thus subsidize the general budgets of these few States.

Option 2. Moderate Adjustments to the Existing Distinct Systems

Horizontal coordination among Federal agencies could be improved by extending the requirement of consent by the surface management agency to the issuance of a mineral lease from the few situations in which it now applies to all mineral leases (and to mining claims if access under the Mining Law is also made discretionary) and by giving the surface management agency joint or sole responsibility for enforcing the surface use restrictions on a mining claim or mineral lease.

Vertical coordination between the Federal and State levels of government could be improved by eliminating State authority under the Mining Law to specify procedures for locating and maintaining claims and to insert development conditions in patents, by requiring Federal surface management agencies to perform “backup” inspections of reclamation of surface-mined Federal coal land when the State has taken over responsibility for enforcement of reclamation, and by encouraging Federal and State efforts to develop coordinated planning and permitting procedures,

In addition, rentals or other payments by mineral explorers or producers designed to compensate for damage to or loss of nonmineral values could be turned over to the Federal surface management agency rather than to the State, with a stipulation that such payments be used to restore or replace the damaged or lost nonmineral values. The 10 percent of the Federal mineral revenues now placed in the Federal general fund, or such smaller or larger percentage as seems appropriate, could be retained instead by the agency or agencies responsible for administering the mineral laws in order to provide more adequate funding for such administration.

The remainder of the Federal mineral revenues could be allocated to the States affected by mineral activities on Federal land, but only to the extent needed to cope with adverse socioeconomic impacts that cannot be handled by the States themselves through their own mineral taxation systems. The balance of the revenues not allocated to the Federal agencies or the States could be placed in the Federal general fund.

Option 3. Major Adjustments

At the Federal level, more integrated management of mineral and nonmineral resources on Federal land could be promoted by revoking the recent transfer of certain fuel mineral leasing functions from the Department of the Interior to DOE, and by making each surface management agency fully responsible for administration of the Federal mineral laws on land under its jurisdiction, The roles of USGS, BLM (on land not under its jurisdiction), and DOE would thus be reduced to those of advisors and coordinators on issues within their expertise, unless a surface management agency should ask them to take a more active role (for example, agencies administering small

isolated tracts of land might wish to have BLM administer the mineral laws on such land).

Finally, all grants of Federal mineral revenues to the producing States could be abolished. States would have to use the revenues derived from their own mineral-taxing powers to cope with the adverse socioeconomic impacts of mineral activities. Thus, they would not be able to make the Federal minerals bear a disproportionate share of the costs of coping with impacts caused by mineral activities on non-Federal as well as on Federal lands. Federal loan programs could be adopted to provide funds needed for planning and construction by impacted communities prior to receipt of the substantial revenues anticipated from State taxes on mineral production,

**Table 1.—Options for Improving Coordination
(Does not include Option 1: “No Change”)**

(2) Moderate adjustments to existing systems	(3) Major adjustments to existing systems	(4) Comprehensive new approach
<p>Mining Law</p> <ol style="list-style-type: none"> 1 Not in line of intent before any surface-disturbing mineral activity (N) 2 Replace location with filing in Federal land office (M, N) 3 No tunnel sites, extralateral rights, lode/placer distinction (M) 4. No State location, work, or patent rules (M, N, 1) <p>Leasing acts</p> <ol style="list-style-type: none"> 1 Surface agency consent for all leases (N, 1) <p>All laws</p> <ol style="list-style-type: none"> 1 Low escalating, payable, bankable work requirements for exploration and development stages (M, N) 2. Commercial-volume production, or advance royalty, requirement for production stage (M, N) 3 Forfeit tenure if annual work or production requirement not satisfied (M, N) 4. Acreage limits for purpose of satisfying work requirement only (M, N) 5 Limit on exploration and development period (M, N) 6. Minimum size for tenure units, and restrictions on overriding royalties (M, N) 7 Surface use regulations, including no residential use without surface agency consent (N) 8 Surface agency enforcement of surface use regulations (N, 1) 9 Eliminate “stale” withdrawals (N) 10 Government mineral investigation on withdrawn land (N) 11. Use of rentals and other surface-related payments to restore surface values (N, 1) 12 Profit-share production payments (M, N) 13 Share Federal mineral revenue with States only if State mineral taxation system unable to cope with adverse impacts (1) 	<p>Moderate adjustments, plus:</p> <p>Mining Law</p> <ol style="list-style-type: none"> 1 Replace pedis possessio with secure exploration tenure (M, N) 2 Discretionary access (N) 3 Title to minerals only, conditioned on work, production and surface use requirements (M, N) <p>Leasing acts</p> <ol style="list-style-type: none"> 1 No known/unknown mineral area distinction (M) <p>All laws</p> <ol style="list-style-type: none"> 1. Guidelines to limit Government discretion on access (N) 2. Competitive bidding (or lottery) for overlapping simultaneous filings only (M) 3. Increase work requirements to level of actual good faith expenditures (M, N) 4. No “valuable mineral deposit” test (M, N) 5. Use of surface for mining-related purposes only, upon payment of appropriate rental (M, N) 6. Strengthen surface use regulations to allow prohibition of certain impacts (N) 7 Payments for damage to certain surface resources (N) 8. Revoke transfer of certain fuel mineral leasing functions to DOE (M, N, 1) 9 Administration of mineral laws by surface agencies, BLM (except on its land), USGS, and DOE coordinate and advise only (N, i) 10 No grants of Federal mineral revenue to States, Federal loans if needed for front-end impact costs (1) 	<p>Moderate and major adjustments, plus</p> <ol style="list-style-type: none"> 1 All lands and all (or only non fuel) minerals under the same system (M) 2 Claim/lease grants rights for all minerals (M, N) 3 Nondiscretionary right of access (N) 4 Surface use restrictions, or compensation requirements for easier-to-value surface resources, based on land types and land use in each area. restrictions relaxed for less unique surface resources as mineral activity progresses from exploration to production: restrictions and compensation schedules published in advance in land-use plan for area (N) 5. Eliminate many or all withdrawals (N) <p>_____</p> <p>M— Improved coordination of mineral activities N— Improved coordination of mineral activities with nonmineral activities 1— Improved institutional coordination among the Federal agencies and between the Federal and State governments</p>