

“Of all those expensive and uncertain projects which bring bankruptcy upon the greater part of the people that engage in them, there is none perhaps more perfectly ruinous than the search after new silver and gold mines.”

—Adam Smith
The Wealth of Nations

INTRODUCTION

The 1872 Mining Law, which governs the transfer of rights to mine gold, silver, copper, uranium and other hardrock minerals from federal lands, is the subject of continuing and sometimes rancorous controversy. Led by environmental activists who are antagonistic to the Mining Law, critics are trying to change the present system. Mining companies are resisting. The result is a bitter battle that has gone on for years, with no end in sight.

The fact that a law passed in 1872 still governs mining suggests to some that reform is long overdue, and there are some legitimate criticisms of the law—primarily, the low cost of acquiring title to land and the absence of royalties paid to the government. In other words, there is a genuine question of whether the public receives

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a “fair return” for the use of public land. However, the changes that have been proposed, many in the name of environmental protection, would alter the incentives for mineral exploration and development and would lead to a decline in domestic mining. Yet they would do little to improve environmental quality. In fact, modifying current environmental laws would be a better way to enhance the environment around mining sites, new and old, than would changing the Mining Law itself.

The purpose of this paper is to sort out the mining-reform issues in the light of the twin goals of fostering development of the mineral resources of the United States and maintaining environmental quality. By digging a little deeper, we can more fairly weigh the reform alternatives against the present law.

The Background of the Mining Law

The Mining Law emerged as a product of the California Gold Rush and the other western mining booms of the mid-19th century. Mineral deposits in the West were found predominantly on federal lands, but there was no law governing the transfer of rights to these minerals from public ownership to miners. So miners implemented their own customs, codes and laws, which Congress codified and amended as the Mining Law of 1872. This legislation gave broad discretion over the use of public land resources to the private sector, requiring little in the way of public administration. The central provisions of this legislation remain intact today.

The Mining Law allows United States citizens and firms¹ to explore for minerals and establish rights to federal lands without authorization from any government agency. This provision, known as self-initiation or free access, is the cornerstone of the Mining Law. If a site contains a deposit that can be profitably marketed, claimants enjoy the “right to mine,” regardless of any alternative use, potential use, or non-use value of the land. Until recently, claimants maintained their rights by satisfying an annual work requirement, but in 1992 Congress replaced this requirement with an annual \$100 holding fee for each claim. Claimants then may

acquire outright title both to the minerals and the land by obtaining a mineral patent, at a per-acre cost of \$2.50–\$5. Producers do not pay royalty taxes on the minerals taken from federal lands.

There is no doubt that the Mining Law provides low-cost access to federal lands for mining, and for that reason is strongly supported by mining companies. To critics, however, the system subsidizes exploration, inappropriately limits the role of the government in administering public land, and creates a breeding ground for speculators and opportunists, who litter the public lands with mining claims used for summer homes, garbage heaps, marijuana farms, taverns, and other nonmining activities.

Three issues are at the center of the Mining Law debate. First is the argument that the private sector has too much discretion over public land-use decisions. Specifically, private interests can currently explore for minerals and establish claim rights on federal lands without authorization from any government agency. Reformers want greater administrative control by government agencies.

Second, reform advocates contend that the current structure of federal, state, and local laws and regulations does not provide adequate environmental protection. The Mining Law, in fact, contains no environmental provisions, but mineral exploration and development are subject to state and federal environmental regulations, including those established by the Forest Service and the Bureau of Land Management (BLM). For critics, the way to protect the environment is to give the BLM and the Forest Service, as well as the Environmental Protection Agency, control over whether exploration may be conducted on federal lands and to pass tougher environmental laws that affect mining. Mining companies disagree.

Third, there is the question of how much mining interests should pay for the right to obtain minerals from public land. The Mining Law has no royalty provisions and, critics point out, billions of dollars of federal resources can pass into private hands for a pittance through the patenting process. Patent holders are under no obligation to mine, and can use the land in any manner they choose. Mining interests generally consider that some change in payments

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to the federal government is inevitable but are concerned that high royalties would force active projects to close prematurely and potential projects to be shelved or dropped altogether.

SOME FACTS ABOUT MINING

To sort out these issues, it is necessary, first, to understand that most land has no value for mining. In 1995, for example, there were 330,112 active mining claims on record with the BLM. Assuming that all claims are 20 acres (the maximum claim allowed), there would be close to 7 million acres of BLM land staked under the Mining Law. This is less than two percent of total federal land holdings in the West.

Furthermore, little of this land will ever be mined. Even in Nevada, a major producer of hardrock minerals, less than one percent of the land has ever been mined (Nevada Mining Association 1997). For every ten promising sites, mining companies expect nine to be abandoned or tabled after preliminary sample drilling. Most of the current claims on record will not turn into mineral development projects any time soon.²

Hardrock mining is characterized by uncertainty, long time horizons, and only rare success. Because so little land actually will be profitable for mining, companies must have broad access to large areas of land for exploration if they are to earn profits from mining. Once potential sites are identified, they must have secure rights to conduct further exploration and development. The Mining Law provides both access and security of rights.

While mining activities cover an extremely small percentage of federal lands, the environmental impacts of mining often extend beyond the areas that are actually mined. Pollution of surface and groundwater, in particular, has been a by-product of mining. In fact, the *Economic Report of the President* (1997, 219) states that hardrock mining has polluted 3,346 miles of rivers and streams in the West. The report, however, fails to distinguish between pollution that came before and after major environmental regula-

tions were adopted in the 1970s and 1980s. The efficacy of these regulations should be examined in order to clarify whether or not additional regulations are necessary. Ironically, as we will see, current environmental regulations actually discourage activities that would reclaim old sites.

How the Law Works

Federal land holdings in the West are the primary sources of hardrock mineral potential in the United States. The Mining Law governs hardrock mineral exploration and development on the public domain. (The public domain is land that was originally in federal stewardship. Acquired lands are those that the government obtained through gift, condemnation or purchase.) Not all public domain land is accessible. Congress and the president have restricted or prohibited access for a number of reasons, including siting of power facilities and the designation of national monuments and parks and wilderness areas.

There are other federal systems for allocating mineral rights. For example, the federal government sells the rights to extract “common variety” minerals, such as sand, stone, and gravel, although the lands remain in federal stewardship. Rights to fossil fuels and fertilizers on federal and offshore lands are leased. So are the rights to hardrock minerals on acquired federal lands, Indian lands, and on most state-owned lands. The function of all these systems is to transfer rights to minerals from federal ownership to private hands.

For hardrock minerals, the exploration and development process begins with a survey of wide areas of land and the identification of a promising site. After making sure that the site is part of the public domain and has not been withdrawn from access, an individual or firm establishes rights under the Mining Law by staking a claim and then reporting the site of the claim to the county recorder and to the Bureau of Land Management (even if the site is on national forest land). Because the maximum claim size of roughly 20 acres is far smaller than the typical mining operation,

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claimants usually stake larger blocks of land. For instance, a 1,000-acre site would require at least 50 sets of markings and filings. Claimants maintain rights from year to year by paying a \$100 annual holding fee per claim. These claim rights are property that can only be removed through a legal process.

Next, firms perform sample drilling to obtain detailed geological information about the site. If the sample drilling looks promising, the firm will undertake a feasibility study to evaluate the site's technological and geological characteristics, as well as the prevailing market and political conditions. This study may comprise as much as five percent of total project costs (Mikesell and Whitney 1987, 76).

Claim rights are fully secure only if the claimant can demonstrate the discovery of a commercially viable deposit. (You don't actually have to demonstrate discovery unless you want to obtain a patent or unless the government challenges the validity of your claim.) A series of court decisions have defined and redefined discovery. Typically, a claimant must prove discovery by presenting evidence in court or administrative hearings showing the commercial viability of the mine, given the quantity and quality of the ore, market prices, and expected costs of extraction, processing, marketing, environmental compliance and reclamation.

Land administrators can nullify existing claims that cannot satisfy the discovery requirement. The only other way that government officials can terminate a claim right is to prove that the claim is being used for nonmining purposes. While the Interior Department has successfully challenged many claims,³ the challenges are costly and time-consuming. A General Accounting Office (1990, 5) report says that the evaluation required for such challenges usually requires \$10,000 in staff time alone. Hearings are held by an administrative law judge, but they may be appealed to the Department of Interior's Board of Land Appeals, and can again be appealed to the federal courts. Mining claimants can hold their claims for years through this process.

In some cases, the federal government will simply buy out claim rights rather than contest them. For instance, in 1986 and

1987, after learning that the Department of Energy had identified Yucca Mountain in Nevada as a potential site for a nuclear waste repository, an individual staked and filed 27 claims in the area. According to the GAO (1990, 34), “after reviewing its options DOE decided that rather than go through the lengthy mineral validation process, it was more expedient to buy out the claim holder, which it did for \$249,500.”

The lengthy procedures and high costs of contesting claims and the possibility of a buyout undoubtedly encourage the opportunistic staking of claims, although the extent of such claims is often exaggerated. A GAO (1990, 18) report documented a number of examples of mining claims used for nonmining activities. It estimated that 1,610 of 662,331 claims across three states had known or suspected unauthorized activities. This figure represented roughly one quarter of one percent of the total claims. Nonmining uses were mostly unauthorized residences, but investment scams, illegal dumping, and marijuana cultivation also turned up.

Once a claimant has demonstrated discovery, the government must buy out claim rights if it wants the use of the land for some other reason. This accounts for the celebrated Crown Butte case in an area near Yellowstone Park. Crown Butte has established discovery for a number of claims that had been mined periodically from the 1890s through the 1950s. (Often technological innovations will allow for the re-mining of old sites.) Despite pressure from environmental groups to halt the operation, the federal government has no power to invalidate the claims. Instead, the Clinton administration negotiated a deal to buy out the claimants.

By establishing discovery, the claimant also has the option to acquire outright title to the land and minerals through the Mining Law’s mineral patent provision. The patent represents the transfer of land title—that is, actual transfer of ownership—from the federal government to private hands.

A patent, however, is not necessary to mine, and there are several reasons why firms may not want to patent a claim. First, despite the low price of \$2.50–\$5 per acre, considerable legal and

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administrative costs can be associated with acquiring a patent. According to the Bureau of Land Management, the cost to the claimant of acquiring title is \$38,000 per claim (U.S. Department of the Interior 1992).

Second, there is the uncertainty of the patent procedure. If a claimant fails to satisfy the discovery requirement when challenged or exposes some procedural mishap during the patent proceedings, the claim rights are nullified.

Third, private land is subject to state and local taxes that do not apply to federal land. The fact that mining companies pay state and local taxes as well as federal income taxes is often ignored in the mining debate. In Nevada, which produces 64 percent of the nation's gold output, mining companies paid, in addition to federal income taxes, \$141 million in state and local taxes in 1995 (Nevada Mining Association 1997).

In spite of these factors, most mining today is conducted on patented land. The recent increase in the demand for patents is partly due to the uncertain legal environment and an antagonistic Secretary of the Interior (Dobra 1994, 43).

Private or Public Decision Making—The Crux of the Debate

The crux of the policy debate over the Mining Law is the trade-off between private and governmental control over how public land will be used. The Mining Law severely limits government control and also keeps nonmining interests (including environmental interest groups) formally outside these decisions. As we have seen, the government's tool kit for limiting or controlling mining contains only two blunt instruments. Department of Interior officials can challenge the validity of claim rights through legal channels, or lawmakers or agencies can restrict or prohibit land access.

The principal means for exercising control is to limit or prohibit mining access in order to preserve alternate values. In some cases, the values have been military or commercial, but national parks, national monuments, and the expansion of the

national wilderness system have also had an important role in limiting access to mining. In fact, only 36 percent of federal lands are open to mineral exploration (Humphries 1997).

REFORM PROPOSALS

Under most reform proposals, mining interests would have to obtain permission to acquire and maintain rights to federal lands through administrative channels. Under the permit/lease system in place for hardrock minerals on acquired lands, for instance, mining interests must obtain an exploration permit from the Interior Department. This permit is good for four years, after which the firm can apply for a twenty-year lease. The Interior Department has the discretion either to grant or to refuse a permit for access; and if access rights are granted, it has authority over whether to extend a lease. The lease extension may be denied if the firm has failed to begin production or if the expected value of mining is lower than another use (or non-use) value of the land.

A number of Mining Law scholars have recommended similar controls for hardrock mining, usually through a permit/lease system (Wilkinson 1992; Leshy 1987; MacDonnell 1976). These critics argue that broader public administrative authority and interest-group access is more in line with current federal land-management practices, which increasingly allow nonmining interests a role in decisions about the use of public land. Under a permit/lease scheme, land administrators would determine whether or not land will be made available and could terminate rights simply by not extending a lease. This additional administrative authority, critics argue, is necessary to evaluate the competing uses of federal lands. There should not be a “right to mine” in all cases simply because mining can be done profitably, they contend. This provision can be found in many reform proposals, even those that are not permit/lease systems.

Under these proposals, land would remain in federal ownership. One benefit of retaining federal ownership would be to

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reduce the incentive to stake claims for nonmining purposes.

No definitive empirical study has been done of the merits of the permit/lease alternative. However, it is clear that the permit/lease system that governs hardrock mineral development on Indian lands and acquired federal land has not completely halted mining (Leshy 1987, 336).⁴ In 1995, acquired lands had 65 leases and 63 prospecting permits covering a total of almost 100,000 acres (U.S. Department of Interior 1996, 178). So, more stringent government controls would not end mining.

Reformers would also give administrators the authority to deny continued access, as they have today on Indian lands and acquired federal land, if they decide that the land is “unsuitable” for mining. After preliminary exploration work was completed, land administrators would assess the mineral value of the land against other possible land values. If the expected mineral value was lower than the other values, long-term access would be denied. If the mineral value was higher than the value in other uses, such as preservation, mining would be allowed.

PROBLEMS WITH REFORM PROPOSALS

Mining interests are quick to point out that an expanded bureaucratic role could stymie exploration and development by hindering land access and creating uncertainty for long-term site access. Mineral development would be in the hands of an agency that has little interest in whether the land is developed. They argue that it would lead to de facto administrative withdrawals of the land, as well as delays in issuing and renewing permits.

Some evidence supports this view.⁵ Gary Libecap (1985) compared federal and state issuance of exploration permits for oil and gas. The average time for approving prospecting permits ranged between one and 18 days on state lands in Montana and Wyoming, compared with 67 days on federal lands in the northern Rocky Mountain area. Libecap also found that federal agencies restricted access to federal lands via de facto administrative withdrawals.

These delays are not limited to oil and gas permits. A 1979 GAO report discusses a permit/lease system for federal lands in the Missouri lead belt. There, the system developed more than a two-year backlog in issuing prospecting permits (GAO 1979, 27). These cases lend support to industry concerns about the timely availability of land under a more restrictive federal system.

Under a permit/lease system, rights are canceled if development doesn't begin. An example illustrates the drawbacks of such a policy. A small firm located a series of claims along the Carlin Trend in Nevada between 1968 and 1970. However, it did not obtain financing for drilling until 1975, and the drilling was not promising, so no development occurred for some years. Nevertheless, the firm held onto the claims until 1980, when another drilling episode resulted in the discovery of significant gold deposits at the site (Smith 1989, 46). In fact, this deposit is one of the chief reasons why annual U.S. gold production has increased by a factor of ten since 1980! If the extension of claim rights had been contingent on development, it is doubtful that the firm could have maintained the claims for twelve years without starting production. As the congressional Office of Technology Assessment noted in 1979, leasing provisions "create uncertainty with respect to long-term continuation of production rights" (OTA 1979, 134).

Indeed, an important positive feature of the Mining Law is that it allows claimants to hold marginal sites in anticipation of changing market conditions, preserving an option to develop the site at some future time. Market forces rather than a statutory time constraint may determine if and when production begins. Claimants can establish rights, invest in information about the prospect, and establish a market for the claims. They can raise capital, establish joint ventures, or table projects for future consideration. This flexibility allows claimants and producers to keep land out of development until there is a positive expected value of development. This is an attractive feature for mining interests. While it does open up opportunities for using land for nonmining purposes, the evidence mentioned earlier suggests that this is not as big a problem as critics imply (GAO 1990).

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The proposal to give land administrators the right to compare the value of mineral use against other possible uses poses numerous problems. First, because there is great uncertainty about mineral potential and other land values, meaningful cost-benefit analysis is unlikely. Mineral potential can only be determined through detailed, and costly, examination of the site. Other values—such as scenic or aesthetic values—are unknown and likely unknowable, despite efforts by some economists to attach dollars to them (Jones and Goodman 1997).

Second, political problems would be enormous. Administrators would either buy out claims that they felt had higher alternative values or they would have the authority to simply terminate rights. If they had to buy out claims, the costs—evidenced by the \$65 million offer in the Crown Butte buyout—could be quite high, and Congress would have to appropriate the funds, which could lead to complicated politics. Such a policy would also encourage the staking of claims in order to be bought out. Alternatively, simply terminating claim rights would create a highly uncertain environment for mineral exploration and development.

ENVIRONMENTAL PROVISIONS

Reform advocates often imply that since the Mining Law contains no environmental protection measures, mining is unregulated. Of course, this is not the case. Mining activities on federal land are subject to federal, state and local regulations for air and water quality, solid waste, public safety and fire control. The Forest Service and BLM have their own regulations. Although regulations such as the National Environmental Policy Act, the Clean Air Act, and the Clean Water Act are not mining-specific, mining firms must comply with them.

For the initial stages of exploration, environmental compliance procedures depend on state laws, and also on whether the Forest Service or the BLM manages the land.⁶ On BLM land, claimants must submit a “Notice of Operations” when their activities disturb

fewer than five acres. These account for approximately 80 percent of exploration activity on these lands (Wilkinson 1992, 66). If the surface disturbance exceeds five acres, or if the activity is located in a restricted area, firms must submit a more detailed “Plan of Operations.” The preliminary finding of a recent BLM study was that “typical” sites of five acres or less cause no significant environmental impact beyond the site (U.S. Department of the Interior 1997, 45678).

On Forest Service lands, the agency performs an environmental assessment review. Forest Service officials can either approve the activity or require the firm to complete a more extensive environmental impact statement (EIS) in accordance with the provisions of the National Environmental Policy Act of 1969 (NEPA). The distinction is important because the environmental assessment review does not automatically provide for public participation, while the EIS does.⁷

Though the impacts of preliminary exploration are fairly limited, the impacts become more serious as the process continues. Sample drilling, in particular, escalates the environmental impacts of identification work. Access roads and other infrastructure generally must be constructed. Failure to properly reclaim the land disturbed by roads may result in soil erosion and pollution to surrounding water supplies. For this reason, as exploration and development proceed, firms will generally have to complete—and comply with—the environmental impact statement required under NEPA.

Claims that the mining industry needs more environmental regulation undoubtedly reflect the fact that in the past many mines were not reclaimed—that is, restored to conditions similar to the state of the land before mining began. The Forest Service began requiring reclamation in 1974 and the Bureau of Land Management in 1981. A 1988 GAO report estimated that approximately 281,000 acres of abandoned or suspended operations were unreclaimed. Of this land, 57 percent was disturbed before agency requirements were enacted and 17 percent was disturbed after agency requirements were enacted. The GAO does not know when the rest was disturbed (GAO 1988).

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While these figures show that the reclamation rules have not been perfectly enforced, they also show that the majority of unreclaimed land was mined before the regulations went into effect. The abandoned mines that dot the western landscape, and the toxic tailings that accompany some of them, are a byproduct of the mineral demands of an industrial society at a time when reclamation was not required or expected.

Most western states now have reclamation requirements covering hardrock mining on federal lands. The GAO surveyed reclamation laws in eleven western states. It found that eight states require approval of reclamation plans before mining operations start and require firms to post bonds or other guarantees to ensure reclamation. Agencies in these states also review the reclamation plan with the firm before operations cease.⁸ These are appropriate measures for ensuring that mining interests incur the full costs of their operations.

Sound environmental policy also requires that the producer of a pollutant should be liable for damages, but federal environmental laws violate the “polluter pays” principle. For example, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, known as Superfund, covers the cleanup of old sites. Liability for past damages under CERCLA is strict, joint and several, and retroactive (Tilton 1994, 64–65). This means that firms may be held liable for past damages and for the costs of cleaning up wastes left behind by previous operations. Such retroactive liability creates a disincentive for returning to previously used sites that may be economically viable. While modern reclamation techniques could mitigate past damages, companies are leery about even exploring old sites since they might be held liable for cleanup even if mining does not materialize. Thus, old mine sites are left to be cleaned up at taxpayer expense or not cleaned at all. Current estimates of abandoned mining sites in the United States range from 100,000 to 400,000, and in 1991 approximately 60 of the 1,200 cleanup sites on the Superfund National Priorities List were abandoned mining projects (Tilton 1994, 62–63).

The disincentive to reclaim old sites extends to state govern-

ments as well. If a state begins to clean up an old site, it is required to reduce pollution levels to the levels specified by the Clean Water Act, regardless of cost. Faced with this level of cleanup or nothing at all, states often have an incentive to do nothing.

The deficiencies of the environmental laws should be at the center of any reform debate, but they are not. And even though the states appear to be central to present reclamation efforts, their role is almost always minimized by advocates of reform. Rather, reformers are seeking to incorporate environmental restrictions into the Mining Law and to require funding to administer and enforce them. Given current budgetary concerns in Congress, it seems unlikely that additional funds will be forthcoming.

Firms should be liable for the pollution they generate, but not for someone else's mess in the past or nearby. Bonding requirements, along with traditional common-law remedies, would do more to ensure that polluters pay for the damages they create than would additional regulations. The Bureau of Land Management has recently promulgated bonding requirements that move the system in this direction. However, these bonding requirements should be coordinated with state requirements.

THE FAIR RETURN QUESTION

The Mining Law raises little money for the U.S. Treasury. Although the law was not designed to raise revenue, it probably fails even to cover the administrative costs of patenting a claim, and it certainly fails to deliver a "market return." While the \$100 annual holding fee may raise \$25 million to \$50 million annually, critics contrast that small amount of money with the payments from federal oil and gas leases. In 1990 competitive oil and gas leases alone yielded \$588 million in royalties and \$49 million in bonuses. Of course, oil and gas productions dwarfs hardrock mineral production.

Much of the criticism of the Mining Law concerns the lack of a fair return to the public for the use of its lands, leading to a

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reformers' Web site claim that it is the "granddaddy of all subsidies." Such criticisms generally focus on the absence of production royalties,⁹ the low price of federal lands offered by the patent provision, and returns from speculation. Let us look at these in turn.

Royalties

A production royalty can be based either on gross revenue from production or on net profit. Soon after President Clinton took office, his administration proposed a 12.5 percent gross royalty, the same rate as for fossil fuel production under the Mineral Leasing Act. One drawback of the gross royalty is that it creates a "high-grading" effect. Since the same royalty is paid on low-grade ores as on high-grade ones, mining companies have an incentive to mine only high-grade ores. Any royalty, of course, will raise the price of exploration and development, and some marginal projects will become unprofitable.

An alternative to a gross royalty payment is a net royalty, based on a percentage of net profits. In principle, a net royalty should not distort the choice of ores. However, a net royalty is costly to administer because it requires the calculation of costs as well as output. And, like a gross royalty, it raises the price of exploration and development. It is not surprising that royalties are unpopular in the mining industry and in regions where mining is an important part of the economic base.¹⁰

Mineral Patents

At issue is whether patents should be allowed at all. One criticism is that the patent provision, as we have seen, has been used to acquire federal lands for purposes other than mining. The BLM has not always scrutinized patent applications to the degree it does today, and as Congress retired other land-disposal laws in the earlier part of the century, the patent provision became a way to obtain land.

Equally important in the debate is the fact that the patent provision allows valuable lands to be acquired with little payment to the government. A GAO (1989) report reviewed twenty patents issued between 1970 and 1988. The 1,677 acres encompassed in these patents had an estimated market value of between \$14.1 million and \$47.1 million, while the federal government received less than \$4,500 in compensation for these lands. In 1992 American Barrick patented nearly 2,000 acres containing estimated gold reserves of \$8 to \$10 billion. Of course, most mining claims never contain reserves worth anything like this.

In recent years Congress has virtually suspended the issuance of patents. Ironically, this has reduced the amount of taxes that firms pay. When mining land is patented, the land becomes subject to state and local taxes that aren't owed if the land remains in federal hands.

The Holding Fee

Until 1992, rather than paying a \$100 holding fee, claimants maintained rights by performing \$100 in annual assessment work per claim. In 1992, Congress began requiring firms to pay a \$100 holding fee to maintain claims in place of the work requirement. The holding fee seems to be a superior alternative to the assessment work requirement, although the fee may be somewhat high.

For one thing, the assessment work requirement was frequently ignored. A GAO (1974) study examined 240 unpatented claims at random, found no mining activity on 239, and no evidence that there was ever mining activity on 237. This led to pressure to enforce the requirement as a sign of "due diligence."

When the assessment work was conducted, however, the result was often a source of environmental degradation. John Whitney, for instance, asserts that "most of the environmental damage resulting from exploration is due to *state* and *Federal* laws that require excavation and other surface disturbance to satisfy annual assessment work" (Whitney 1981, 286). Many authors note that to satisfy \$100 of yearly assessment work, claimants could simply

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rent a bulldozer, scrape the land, and keep the receipt as proof of compliance. Tougher diligence requirements would have led to more “exploration” activity, compounding the degradation.

The introduction of the \$100 holding fee in 1992 remedied several shortcomings of the assessment work requirement. The fee should mitigate environmental damages associated with unnecessary assessment work. Together, the reporting requirement and the fee make it easier for mining companies to check land titles at sites where there is uncertainty about the status of past claims and will clear up ambiguities associated with the assessment work provision. Rights are more clearly specified, making them more valuable.

The fee should also raise costs to speculators, and it may lower future land-acquisition costs by clearing a number of old claims. In fact, the holding fee has already had a remarkable effect. Between 1980 to 1992 the number of claims reported to BLM exceeded one million each year, but since the introduction of the holding fee this number has dropped to an estimated 340,000. However, it is not clear that firms are doing less identification work. Claimants that staked both lode and placer claims on the same site probably dropped one of these claims.¹¹ Similarly, firms holding five-acre mill site claims probably opted not to maintain these claims.

The \$100 fee per 20-acre claim is higher, however, than the holding costs of the federal permit/lease system for hardrock minerals on acquired lands. Consider a 1,000-acre site under the two systems. Under the Mining Law, the claimant can stake and hold 50 claims at a cost of \$5,000 per year (plus minor administrative expenses). In contrast, for hardrock minerals on acquired lands, the \$1 per-acre charge for the prospecting permit amounts to only \$1,000 each year. Of course, the claims under the Mining Law are more secure, and therefore warrant a higher price. In addition, the higher price may be appropriate since the firms do not have to pay production royalties. However, the higher price may also discourage exploration and development.

OTHER REFORM POSSIBILITIES

Although the mining industry generally supports the Mining Law, there are a number of kinks in the current system that mining companies would like to remove. For instance, claimants often must comply with regulations at the federal and state level that are noted for their “lack of uniformity” and “questionable necessity.” (MacDonnell 1976, 24) Ambiguities of the federal and state rules have provided fertile ground for disputes and litigation. One observer has said that the law at times seems like “the foundation of a cockfight ring.”

There are thousands of cases on the books relating to disputes over priorities, compliance with location procedures, boundary overlaps, extralateral rights, performance of assessment work, lode versus placer, the existence of a discovery, and on and on. (Parr 1989, 68)

As a result, the legal environment contains considerable uncertainty, and the associated legal machinations can prove expensive.¹²

If projects reach the development stage, costs of land acquisition for operations and waste sites may be high. Although the Mining Law provides for one five-acre claim for these purposes per lode or placer claim, this acreage is generally insufficient. A proposed site in western Colorado in the late 1970s, for instance, required 5,000 acres for operations and an additional 3,000 acres for waste storage (Mayer and Riley 1985, 45). Producers have to purchase additional private lands or trade lands with the government. These acquisition costs often account for a considerable portion of outlays associated with establishing and maintaining rights.

A number of ways exist to reduce the costs associated with acquiring land rights. For instance, the distinction between lode and placer claims could be dropped and the maximum size for mining

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claims and mill sites could be increased. This would reduce the number of claims to be staked per site and thus the cost per site. It could free up funds for productive activities, reclamation bonds, or fees or taxes. The current acquisition costs, along with the high cost of the holding fee, could lead the mining industry to be willing to bargain with reformers.

CONCLUSION

The chief issue surrounding Mining Law change is the trade-off between private and public discretion over public land-use decisions. Increased federal land management, as proposed by the critics of the Mining Law, would bring more political control over public land use, and politics, not individual decisions, would determine where, when and if mining occurs. While the precise impact of such administrative discretion is not known, more government control would clearly discourage some mining. So would the imposition of royalties. Thus, Mining Law changes would have implications for the domestic production of “strategic” minerals,¹³ for jobs, and for state and local taxes.

While environmentalists speak as though polluters should be liable for the harm they cause others, a number of deficiencies in federal laws violate this principle. These deficiencies are not found in the Mining Law but, rather, in environmental laws such as Superfund and the Clean Water Act. In particular, the requirement that mining companies take on responsibility for others’ damages is hindering cleanup, not helping it. Superfund and the Clean Water Act are keeping both mining companies and state governments, which have an increasing role in environmental-protection matters, from active reclamation of abandoned sites. Reliance on state or federal bonding and common-law remediation is far more appropriate for assuring reclamation and avoidance of harm to others.

The Mining Law as it now stands has substantial merit. The self-initiation provision allows broad access for exploration, the patenting provision assures secure property rights when a discovery

is made, and a holding fee allows claimants to wait for market conditions to justify production. Whether mining companies should pay royalties is a legitimate subject of discussion. Clearly, the most profitable mines could pay more, but those closer to the margin might be scrapped. This might please environmentalists, but it would have costs for the nation as a whole.

As for environmental impacts, current environmental laws often provide the wrong incentives to ensure accountability and encourage reclamation. Changing those laws is where reform is needed the most.

NOTES

1. This includes U.S. subsidiaries of foreign firms.
2. Critics point out that roads to claim sites often have a greater impact on the surrounding environment than development of the claims themselves, but timber access roads are much more commonplace.
3. Between 1956 and 1967 the Bureau of Land Management invalidated claims in 140 of the 147 contests it initiated on the grounds that the claimant could not meet the discovery criteria. Cited in Later (1981, 589).
4. Leshy cites production figures and extant leases from 1983 and 1977.
5. See also Leal (1995), who compares the relative performance of state and federal timber programs.
6. Congress established procedures for the Forest Service in 1974 and for BLM 1981. In some cases an operation may cover both BLM and Forest Service lands.
7. This is the result of a court decision. *Friends of the Earth, Inc. v. Butz* 406 F. Supp. 742 (D. Mont. 1975).
8. While the other states do not have formal laws requiring reclamation, state officials assured GAO that there were measures in place for assisting state officials in mitigating mining impacts (GAO 1988). The eight states with reclamation measures are

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California, Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. Those without formal measures are Arizona, Nevada, and New Mexico.

9. Firms, of course, pay federal taxes. Dobra (1994, 36–37) estimates that precious metal producers accounted for \$4 billion in revenues in 1993 and paid \$220 million in taxes—\$130 million to the federal government—in 1991.

10. See Humphries (1994) for a summary of the various royalty provisions.

11. The Mining Law distinguishes between lode and placer claims. If it is not clear whether the deposit is a lode or a placer, the claimant might stake two claims on the same land.

12. Leshy (1987) catalogs a dizzying array of legal niceties associated with the Mining Law.

13. See Morgan (1989).

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