MINING AND RECLAMATION ON PUBLIC LANDS; WHERE WE ARE AND WHERE WE ARE GOING.

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Abstract: The Bureau of Land Management (BLM), Department of the Interior, manages approximately 272 million acres of public land, most of which is located in 11 western states. Hardrock or locatable minerals exploration and mining activities on public lands open to mining are authorized under the Mining Law of 1872, as amended. The Bureau of Land Management has initiated a national program to reduce the impacts to mined lands and to provide for restoration of disturbed lands through reasonable reclamation. Our paper will examine BLM's continually evolving policies, mineral industry activity, the changes being contemplated in policy and law. We will analyze what the role of the industry on Federal lands will be and what management of that role will look like as a result of the new policies and industry developments.

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The Mining Law of 1872 represented the culmination of national policy debates, lasting from 1849 to 1872, as how best to manage the Nation's mineral wealth. The Lode Law of 1866 ended the debates about the form of the Federal law by adopting the codes found in the States, Territories, and Mining Districts. The Placer Act of 1870 added to the body of law by including the placer mining industry with the ambit of the law. The Act of May 10, 1872, modified and consolidated the provisions of these two Acts creating the fundamental framework of the law.

The Mining Law of 1872, as amended, embodies four fundamental principles: self-initiation of mineral rights, free access to and across Federal lands, security of title to the mineral deposits, and the concept of due diligence. These principles were derived from the practices found in the miner's codes. They are as applicable today as they were then.

The Mining Law created a system which recognized the considerable risks taken by those who search for minerals and rewarded those who successfully took the risk. Discovery of a valuable mineral deposit followed by proper location, recordation and maintenance of a mining claim vests the claimant with a constitutionally protected property right secured against uncompensated takings by all parties, including the Federal government. The mining claimant can develop the mineral deposit without the permission of the Federal government, paying no royalties on the production, but paying all Federal, state and local taxes on the profits from the production. If the mining claimant wishes title to the valid mining claim can be obtained through the filing of a mineral patent application.

Further amendments followed from 1872 to the present day. Significant amendments removed States and ultimately entire classes of minerals from the operation of the law, such as the Mineral Leasing Act and the Materials Act. Numerous technical amendments were likewise enacted. Further modifications, extensions and interpretations of the law followed in the State and Federal courts. The result is a body of Federal and State case law similar in nature to a "Common law" system. Likewise, the nearly two decades of environmental legislation affecting operations conducted under the law have for all practical purposes further modified the mining law.

Since enactment of the Mining Law, there has been continual interest in modification of the law. Most of the early reform issues were the product of internal industry debates. Beginning in the 1950's, the discussions began to take on a concern for the environment and, by the 1970's, assumed a confrontational tone between environmental and industry groups. The dichotomy continues and was reflected in the reform proposals debated in the congress.

The BLM has initiated a series of actions under the title, The Surface Management Initiative, which are intended to strengthen environmental regulation of mining. The initiative contains several elements, all of which are based on the increased funding and increased manpower needed to establish a sufficient field presence by the BLM's employees.

The Surface Management Initiative consists of seven major components:

1) Increase funding program-wide,
2) Increase inspections of operations,
3) Development of a National cyanide policy,
4) Evaluate the extent and nature of the pre-surface management rule disturbances,
5) Review reclamation at all operations authorized under the rules,
6) Change the bonding policy, and
7) Eliminate Illegal Mining Claim Occupancy.
8) Review the rules controlling the operations approval process and amend them where necessary.

For the purposes of this paper we will not discuss further the BLM's funding concerns, however, we will discuss in greater detail the remaining components.

Inspections

The BLM's new inspection policy was initiated in the Fall of 1989 to increase its field presence by establishing a mandatory inspection schedule for all operations. There

are three categories of operations with set minimum inspection frequencies and requirements:

1) Producing operations using cyanide - inspected not less than quarterly or every 3 months following initiation of production,
2) Producing operations using extractive methods other than cyanide - inspected at least biannually or every 6 months and
3) Non-producing surface disturbing activities requiring reclamation - inspected on a biannual basis or every 6 months.

Any surface disturbing activity or operation may be inspected on a more frequent basis if determined necessary by the Authorized BLM officer.

Cyanide Policy

The BLM cyanide policy was initiated by an August 6, 1990, instruction to the field offices This policy establishes consistent standards governing the use of cyanide and other chemical leachates used in operations on public lands, utilizing the existing State regulatory structure wherever possible.

The goal of the policy is to prevent unnecessary or undue degradation and to ensure that these leachates are used in such a manner that protects wildlife, livestock, and public health and safety. The policy also established a BLM management program and a set of guidelines for construction of facilities at proposed operations. Bonding levels, inspection frequency by both the BLM and the operator, and reclamation standards are a part of the policy.

Pre-Rule Disturbance

Under the United States environmental laws and the hazardous materials laws, the BLM may be liable for the cleanup or control of sites that threaten human health or the environment under the provisions of the Superfund law. As part of the BLM's inventory process for detecting hazard materials sites on public lands, the BLM is presently developing plans for conducting inventories of pre-rule (pre-1981) mining activities.

Such sites include abandoned mines and workings which contain hazardous materials as a result of mining and processing activities, as well as, abandoned mines and workings used for illegal dumping and drug manufacturing. Given the long history of mining in the western United States, the potential for liability is enormous. As an interim measure, the BLM will continue to cooperate with State inventory programs, take measures to protect public health and safety, reduce impacts to sensitive areas, and respond to sites known or discovered to contain hazardous materials.

Reclamation

The new reclamation policy goal in the BLM is to achieve a greater degree of uniformity in the application of the surface management rule among the various BLM offices, to identify sound and useful industry practices, and to facilitate the transfer of information Nationwide within the BLM and the industry The BLM is using Surface Management "Assistance Teams" to visit sites and document their findings of practices which have or have not worked at a given site. Reports generated by the Assistance Team will be disseminated to BLM field offices and industry to provide additional information to aid in choosing reclamation techniques.

To provide an additional support to the identification of sound and useful practices, a task force developed standards for reclamation and abandonment for all solid minerals operations on Federal and Indian lands. The standards have been incorporated into the BLM's manual system and a companion handbook has been printed. The intent is to ensure sound reclamation of exploration and mining activities through the use of a nationally uniform and consistent set of reclamation and abandonment procedures which will make use of appropriate standards.

The BLM Solid Minerals Reclamation Handbook sets forth nationwide standards as a basis for development of site-specific reclamation requirements. BLM professionals

use the guidance contained in this handbook to judge the adequacy of both proposed and final reclamation activities for all types of non-coal solid minerals activities. Activities addressed in the Handbook include exploratory drilling and trenching, underground and open pit mining, waste rock and tailings disposal, heap leaching, and milling, along with post-mining multiple use management.

The long-term reclamation goals for mineral operations are to shape, stabilize, and revegetate disturbed lands in order to provide a stable, productive post-mining land use which is compatible with the surrounding area. Short term goals are to stabilize the disturbed areas and protect adjacent areas.

We will now summarize some of the reclamation requirements of the BLM.

1. Roads
Access roads are used in all mineral activities, from providing access for drilling equipment to haul roads for active mines. The impacts from access roads can be extensive. BLM requires that roads be located away from drainage in order to protect water resources. Reclamation of roads requires that surfacing (such as gravel) be removed, cut slopes be filled, top soil be replaced, and the road bed ripped to reduce compaction prior to reseeding.

2. Drill Holes
Drill holes which are not proposed to be used as water wells must be plugged at the surface to prevent injury to the public, livestock, or wildlife. If water is encountered, the water-bearing rock or aquifer must be sealed (cemented) to prevent migration. Topsoil is spread over the surface and seeded.

3. Mine Shafts
Mine shafts are sealed by backfilling with rock or capping or sealing with a manmade cover or plug. Of primary concern to the BLM is to eliminate the potential for injury to the public, livestock, or wildlife from the presence of open shafts.

4. Buildings and Other Surface Improvements
Structures must be removed after mining operations are complete. Special consideration is given to the removal of fuel tanks, storage tanks, contaminated foundations, and other facilities which pose a potential hazard.

5. Pits
Reclamation of coal mines requires that the operator completely backfill the mined area and eliminate the highwall. Other mines are not required by law to backfill pits; however, BLM encourages appropriate backfilling as a means to enhance the postmining land use of the pit area, reduce slopes and possible hazards, and dispose of excess waste rock. Appropriate backfilling of pits and reduction of highwall slopes (through blasting or other methods) are important aspects in increasing the postmining value of mined areas.

6. Waste Dumps and Tailing Impoundments
Reclamation of areas upon which waste rock is placed involves reducing the slopes of the area in order to increase the stability and potential for revegetation. Control of water is also important in stabilizing the areas. Efforts are made to reshape waste materials to a shape which is compatible with surrounding land forms.

7. Revegetation
Topsoil is saved from areas which will be mined at the beginning of operations. After operations are completed and the area is reshaped, topsoil is spread in order to enhance revegetation efforts. Native species are generally preferred for revegetation efforts in order to increase wildlife habitat; however, some fast-growing non-native annual species may also be seeded in order to achieve a quick cover and reduce erosion.

The BLM also encourages research efforts at active mines in order to identify new ways of reclaiming mined areas and provide a productive post-mining land use.

Bonding

The BLM revised its bonding policy in August 1990. Under the new policy, financial guarantees to ensure reclamation will be required of all plan level operations. For those of you in the exploration business this

may be a new requirement. For those in mining, we expect that there will be few changes.

The question which immediately arises is, "How large of a bond will be required by the BLM?" That will depend on whether you are in exploration or mining. For exploration activities, and we have chosen to define these activities as drilling, a bond will be capped at $1,000 per acre, unless you have established a record of noncompliance.

For all activities involving the use of cyanide or other chemical leachates the bonds must be large enough to meet 100 percent of the BLM's estimated cost to reclaim the site. For all other activities usually referred to as mining, exploration by dozing or trenching the bond must be equal to the BLM's estimated cost of reclamation, up to a $2,000 per acre limit. Amounts in excess of $2,000 per acre will not be required unless you have established a record of noncompliance.

For the operator who fails to understand the need for sustainable development and appropriate reclamation, and who establishes a record of noncompliance, there will be a major additional incentive. There will be a requirement for 100 percent bonding to held by BLM, the existence of any State bonds notwithstanding.

In addition to the immediate change in policy, the BLM has published proposed changes in the surface management rules in 1991. These proposed changes include:

1) revising the bonding section of the regulations to require a form of financial guarantee for Notice level activities and
2) expanding the number and types of acceptable financial guarantees to include not only the already acceptable surety bonds, cash deposits, and Federal securities, but State and municipal securities, some commercial paper, deeds of trust on real property and liens on mining equipment.

We are reviewing the comments and we are preparing a final rule based on the comments.

Mining Claim Occupancy

Non-mining uses, whether commercial or non-commercial and which may involve residential occupancy, are never authorized on mining claims. The BLM Director, during testimony presented to the House Subcommittee on Mining and Natural Resources on September 6, 199O, correctly pointed out that there are circumstances where residency may well be a normal or "reasonably incident" part of authorized activities conducted on mining claims or on Federal lands.

The BLM has published proposed rules to further define the reasonably incident standard and to clarify when occupancy which involves residence is allowable. The proposed rules focus directly on use and residential occupancy, identify illegal uses, and establish appropriate penalties for such illegal uses. The proposed rules set out the conditions under which all uses and activities, including residency, are reasonably incident to prospecting, mining, and processing. Further, the proposed rules set the general standards of practice that all uses, residency in particular, must meet.

Surface Management Regulations

The BLM Surface Management Regulations (43 CFR 3800) govern locatable or hardrock minerals activities 1980. A BLM task force identified several areas within the surface management regulations which, with change, could increase BLM'S effectiveness at managing hardrock minerals activities on public lands. As part of BLM's review of the Surface Management Regulations, four public workshops were conducted in Western cities, In addition to comments from the 250 workshop participants, BLM analyzed 140 written comments prior to identifying potential changes to these regulations.

Notice-level activities are those activities which disturb 5 acres or less. BLM must be notified of notice-level activities in advance; however, specific BLM approval is not required prior to commencement of activities. Plans of operations are required for operations

of more than 5 acres disturbance and require BLM approval.

One of the changes under consideration would limit the use of notices to specific types of activities in order to allow BLM additional discretion over certain types of activities (e.g., cyanide heap leach operations), and require a description of reclamation activities for notices. Another change under consideration is inclusion of a penalties provision as authorized under the Federal Land Policy and Management Act for knowing and willful violations of the Surface Management Regulations.

BLM sees any regulatory change to the Surface Management Regulations as a strengthening process to the existing regulatory framework. Proposed changes will be designed so as to increase the effectiveness of the existing regulations to protect resources on public lands, while continuing to encourage mineral development by responsible operators.

Showcasing Mineral Resource Operations

By now there should be no one in the mining industry who does not recognize that saving the environment for future generations is a popular theme and goal of the American public. Consequently, public scrutiny of public land management programs has been intense and we expect this scrutiny on the domestic industry will continue and even increase. It is important that both the BLM and the minerals industry demonstrate their efforts to prevent unnecessary or undue degradation, show a commitment to a balance between protection of the Public Lands and the environment and demonstrate the sustainable development of Federal mineral resources and lands.

To accomplish this task, the BLM is initiating a project to showcase operations that display good public land stewardship. Most operations will probably be mining operations, but we hope to have some exploration activities as well. The BLM will nominate operations for designation as showcases, but the ultimate selection will depend on an operator's willingness to participate since showcase operations must be highly visible to the public. If selected, the operators must agree to allow their operation to be available for public tours on an appointment basis.

Other high visibility aspects of showcasing an operation may include: development of a 20-30 minute video tape, development of a color brochure, a dedication ceremony, news releases, and articles in various internal BLM information communications. Operators may also be asked to share the costs of developing interpretive facilities or other facilities (such as overviews, picnic tables, and interpretive signs or displays) to enhance the educational experience of the interested public.

The BLM is considering several different categories for selecting showcase operations including:

1) successful environmental mitigation,
2) successful reclamation, either on-going or final,
3) successful productive second uses of developed lands, and
4) successful interaction between areas of historic and present day mineral development activities.

The BLM would like to combine mineral resource showcase operations with its Back Country Byway Program, and possibly, its Adventures in the Past programs. One of the major objectives of the Back Country Byway program is to showcase "multiple use" activities on the public lands and demonstrate sustainable use of the Public Lands.

Back Country Byways are usually roads linked to, but off, major highways that the interested public may travel during a vacation and learn about sustainable development activities and their management. The interpretive system for the Byway program is already in place and can easily be modified to accommodate mineral resource showcase projects.

Combined with the Back Country Byway program is the Adventures in the Past Program to highlight unique cultural resources

on public lands. Since the role of the mining industry in the settlement and development of the American West is undeniably large, many of these resources are related to the history of mineral exploration and development, especially mining. This program follows the fourth proposed category for selection of mineral showcase operations. We would like to use it to build a better understanding of the importance of mineral exploration and development to past, present, and future generations.

Where Are Things Heading?

The trends for the 1990's are clearly those of significant change in the domestic industry. The United States domestic industry has been dominated by the "Gold Boom" in Nevada and elsewhere in the West as well as the rest of the world. In 1992, the GAO Staff reported that the major contribution to industry revenues from Federal lands in 1990 was accounted for by gold. Further, most of that value originated in a single state, Nevada. The only other commodity to even approach gold in levels of production value was copper, which was generally restricted to Arizona and New Mexico. Because of the dominance of gold in domestic industry, little attention has been given to exploration for base metals for most of the 1980S. This is reflected in the results of industry's worldwide exploration budgets, in which base metals amount to about 33% of all expenditures.

Depressed prices in a what amounts to a single commodity industry particular gold have a far greater impact on activity. Since 1989, gold prices have declined and stayed flat, generally in the $350 range, less than the $400 figure that was used to evaluate many of the existing domestic gold operations. The decline in price seems to been reflected not only in industry activity, but also in the number of new mining claims filed with the Bureau, both Nationwide and in Nevada. The BLM mining claim records show a decline in new filings nationwide from about 160,000 in 1988 to about 78,000 in 1991. In addition, the total active claim count declined from about 1.2 million in 1989 to about 1.1 million in 1991. New plans of operations rose from 398 in 1985 to a peak of 503 in 1989 and declined to 451 in 1992.

The decline in domestic activity is also reflected by the general state of the gold industry and discussed in the trade literature as well as a 1990 report by Dobra and Thomas . They noted among other things; the aggregate domestic exploration expenditures for 1990 were 15 percent less than the 1989 figures and projected a further decline for 1991 due to reduced profitability of many companies; the probability that small companies would find it hard to raise new debt or equity, particularly if gold prices remain below $350 per ounce for extended periods; an accelerated trend towards concentration of production in the gold industry where 30 mines (in 1989) accounted for almost 75 percent of the production in the United States.

Dobra and Thomas also observed that cash operating costs rose slightly (about 2%) between 1989 and 1990 and when property and mining-specific taxes were included the costs averaged $237 per ounce. The average selling price of gold left the industry with $147 per ounce to pay income taxes, exploration costs, and all capital recovery costs including a minimum rate of return attractive enough to bring new capital to the industry. Against this average return, they noted the presence of new costs, such as environmental compliance costs, which in a typical Nevada surface operation raised capital costs by about 9 percent and operation costs by about 9 percent. They projected that the minimum environmental costs can be expected to raise average total gold production costs by about $20 per ounce.

The net effect is a squeeze on potential profits to be earned from deposits in the United States. Existing operations are operating closer to the margin and potential operations are less attractive. Both are highly sensitive to new costs which cannot be absorbed by reduced labor costs, new mining technology or reductions in mining costs or overhead. The domestic mining industry will be generally unable to find further reductions in these areas. The squeeze on potential profits reduces the domestic industry's ability to

attract either domestic or foreign capital for further investments.

The squeeze has encouraged significant investment in Latin America on the part of the "domestic" mining industry. While exploration in the United States has remained relatively stable, about 25 percent of worldwide expenditures, it has largely shifted from the search for new deposits to the delineation new ore at existing producing operations. At some point the existing operations will be exhausted and replacement ore will have to be found.

Mineral industry financial analysts have observed that "... As long as the mining industry is able to keep a steady flow of projects entering into the pipeline and making progress along the way, our society will be supplied with the needed minerals. This requires among other things that the return on investments in mining ventures be at least as high as alternative investments and that government policy allow access to public lands...." The general trends in the United States appear to be contributing to the squeezing of the return on investment, through project delays, increased operating costs, declines in size or grade resulting in marginal ore bodies, and increased taxation. The unsettled situation with respect to the mining law does not encourage the investor.

From the investor's and, therefore, the explorationist's perspective, there appear to be more reasons to search for replacement ore in Latin America, the Pacific Rim, and the nations that formerly comprised the USSR than in the United States. These host countries have or are in the process of re-writing mining laws, tax laws, and foreign ownership laws to encourage private investment in the minerals sector. These countries have not forgotten the rule of thumb noted above. They have sought to encourage the trend in exploration expenditures which has been to expend more on unproven potential deposits in their countries. The result for the United States is to restrict domestic exploration expenditures to high potential properties capable of being produced to the detriment of the grassroots mineral property.

From the producer's standpoint the rich will get richer (or larger, if you will) and everyone who can afford to do so will depart for other countries. This will leave BLM with an interesting situation. On the one hand it will be presented with development projects from large well funded operations capable of absorbing costs associated with state of the art environmental controls. Other development projects will be the projects of operators who can not afford or do not wish to go overseas. They will likely be marginal operations with a limited ability to absorb increases the normal project costs, much less state of the art environmental. Yet these projects will provide local economies with jobs and investments and will have support among the communities. BLM must tailor its minerals management program to deal with both types of operators on the basis of their strengths and weaknesses.

Large operators can be left to themselves more often than not and be expected to meet the performance standards of BLM. This will require some now QC/QA systems to be developed which may alter the fundamental manner in which BLM works with these operators. Some interesting arrangements have already been tried in the California Desert with memorandums of understanding (MOU) between the regulators and the operators. In essence a detailed plan of operations allows the regulator to develop a MOU that reduces the need for repeated minor plan modifications. Consistent with the MOU, the operator can change activities as needed with little need for review and approval from BLM.

The above type of arrangement gives the BLM some of the additional resources it needs to help the smaller and less well funded operator develop and implement a sound plan of operations while exploring alternative environmental control systems. In addition, BLM may have to create a small operators assistance program to help operators design proper operations and develop sufficient and properly crafted plans of operation.

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3. Dobra, J.L. and P.R. Thomas 1990. The U.S. Gold Industry Executive Summary. The Economics Institute, University of Colorado, Boulder, CO. 36 pp.

POSTER PAPER ABSTRACTS