

NATURAL RESOURCE POLICY, LAW AND ADMINISTRATION  
WITH RESPECT TO  
MINERAL EXPLORATION IN BRITISH COLUMBIA

by

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## ABSTRACT

Increasing pressures on British Columbia's natural resources have led to a greater concern for overall planning of resource development in the Province. Good inventory data are essential for efficient planning, and, while this can be obtained relatively easily for most renewable resources, mineral resources present a serious problem because they cannot be readily identified. This has led to a general lack of consideration of the mining industry in natural resource planning.

While the impact of mining upon the environment has been well documented, little effort has been made to determine what effects are attributable to mineral exploration. This shortcoming is very important because mineral exploration is unique among inventory processes in that, although it does not generally involve the use of surface resources on a large scale, it does involve occupancy and use of the land surface. Thus, because free miners may enter upon almost any land in the Province for the purpose of mineral exploration, there will be widespread interaction with other resource users.

In this study, the nature of mineral exploration associated with hard-rock metal mining in British Columbia and its impact upon the environment described. Interactions with the traditional extractive industries such as forestry and ranching are discussed, and actual

and potential sources of conflict are pinpointed. Attention is given to the possible need to withdraw land from mineral exploration in order to protect watershed, recreational, aesthetic and ecological values.

There is almost no literature that deals specifically with the interaction of mineral exploration with other resources, and so it was necessary to gather information from individuals in government and industry who are directly involved with resource planning, administration and management in British Columbia.

Attention is given to land-use regulation as it might be applied to mineral exploration. While reference is made to the possibility of introducing alternative forms of mineral tenure, the study was developed on the basis of the present system of mineral tenures because of the probability of widespread opposition by certain sections of the mining industry would appear to make any substantial change unlikely in the immediate future.

It is concluded that, if the rights and responsibilities of all individuals are clearly defined and rigidly enforced, mineral exploration in British Columbia can co-exist with most forms of resource management. However, the mining industry must be brought into any discussions on resource policy and planning, because it is only through a mutual awareness of each other's problems and objectives that common ground can be found to settle operational problems and yet achieve the objectives which, in the long-term, will benefit the people of British Columbia.

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Resource management in British Columbia

Until quite recently, an attitude prevailed that British Columbia was an inexhaustible source of natural resources, and both government and industry were concerned solely with reaping the harvest. Since the Second World War, however, the government has been guiding the Province out of this purely exploitive phase of its resource policy and into a more rational allocation and development of its natural wealth. The first post-war attempt to consider integrally the needs of society and industry with regard to a natural resource was the study of the forest resources of British Columbia carried out by the Sloan Commission in 1945 (70). Despite the controversy over such items of policy as sustained yield, that study was a major step forward, and the development of the present-day system of tenures has placed the forest industry on a much sounder base from which to conduct its business.

A review of forestry literature has shown that in British Columbia, as in North America as a whole, foresters have been extending both their interests and their area of competence from forest engineering and timber management to the broader field of forest land management.



To this end, much attention has been given to the concept of multiple use and its various derivatives. The objective of these concepts is to allocate land to its optimal use under a given set of socio-economic conditions, and the fulfillment of that objective requires a fairly detailed knowledge of the location and extent of each resource (71). This inventory data can be gathered relatively easily for many natural resources such as timber and grazing land. Indirect methods of assessment are also available for gathering data on fish and wildlife populations, and an assessment can be made of recreational potential. However, mineral resources occur below the land surface and cannot be identified as readily as surface resources. Mineral resources are also unique because the inventory process itself necessitates some alteration of other natural resources. If a mineral deposit is known to exist, the development and operation of the mine can be considered in the planning of optimal land use in any area, but there is no guarantee that exploration for minerals is the optimal use of the land. Thus, in their fairly detailed investigations of the integrated approach to resource management, Smith (71) and Travers (72) both concentrated on renewable resources and mentioned mineral resources only in passing.

Because of this basic difficulty in planning for mineral exploration, many land managers have tended to adopt, at best, an attitude of sufferance towards the mining industry, and, in many instances,

have made little effort to understand its problems. However, it must be admitted that in the past the mining industry did not make the situation any easier by making statements such as:

"The mining industry feels that this lack of understanding is eroding the inherent essential rights of free miners, long recognized and clearly established in early statutes, to explore for mineral deposits on Crown land. If this erosion is left unchecked, it will have a serious adverse effect on the future of mining and hence the economy of this Province." (33)

Although some considerable time has passed since the miners had the Province to themselves, it would appear that many wish to retain for the mining industry a favoured position over other natural resource interests. However, in the development of a rational resource policy, the principle of first-come-first-served has no place. All natural resource interests must be given equal consideration to ensure that the needs and desires of society are not subordinated to the "inherent rights" of a group of investors whose main interest in resources is their conversion to capital and profit. What is best for the mining industry is not implicitly what is best for British Columbia or Canada. However, the question of equal consideration should not be confused with that of equal priority. While, in any one area, all resource interests must be considered, there is no requirement that all of

these interests should be given equal weighting when a decision is being made. In fact, the question of equal priority occurs only rarely when the development of a proven mineral deposit is being considered. While, in some instances, one of the difficulties encountered in assigning priorities among various biologically-based resource uses is due to minimal differences in net returns, the enormous potential of a proven mineral deposit in terms of dollars per acre will usually override the value of any other resource investment on financial grounds.

While some of the external costs of the mine itself are now being considered in the feasibility studies of many operations, for example the impact upon water resources and the need for reclamation (40), no attempt has been made in such studies to consider the impact of mineral exploration, which yields no significant monetary returns unless a mine is subsequently developed, and, indeed, may reduce the value of the land surface with respect to other natural resources (37). It would be very difficult to determine even the order of magnitude of such external costs, and if the need for a mining industry and its concomitant exploration activities is accepted, the only available course of action is to ensure that there is a minimum of interference with the interests of other natural resource users.

## 1.2 The study

Although the mining industry has been improving its relations with other natural resource interests over the past few years, there exist a number of conflict areas which appear to be due to a lack of understanding of the structure and operation of the mining industry on the one hand and of the necessity for regulation of all natural resource use on the other. The picture is further confused by many unfounded statements about mining and the damage caused by miners. It is the purpose of this study to determine the extent to which mineral exploration interacts with other natural resource interests and to pinpoint sources of actual and potential conflict.

The single resource orientation of British Columbia's natural resource legislation and administration has led to contradictions in some statutes. . Because of a lack of consideration of other resource users during the development of the legislation, there is disagreement about the interpretation of some statutory provisions, and the outcome of controversies may depend more upon the power and influence of the respective government departments than upon a rational consideration of natural resource use as a whole. Where such conflicts are found to exist, the amendment of the legislation will be considered. Any rights or restrictions arising from legislation should be a considered matter of public policy and not the result of the haphazard development of

various resource uses and government agencies.

The needs and activities of the mining industry will be examined in an attempt to determine how these may be accommodated in an integrated approach to the development of natural resources in British Columbia.

The approach taken in this study will undoubtedly reflect the author's background. It is that of a forester looking at another resource-based industry and attempting to relate its problems to his own interests. As such it is hoped that this dissertation will provide a useful introduction to those resource managers who have not given much, or indeed any thought to the mining industry so that all resource managers might be able to work in cooperation for the benefit of the people of British Columbia.

### 1.3 The scope of the study

The definition of the term "mineral" has been very important in a number of legal cases dealing with title to minerals, and the courts have usually adopted the standpoint that the deciding factor is the meaning of the word in the vernacular of the mining world, of the commercial world, and of land owners (4). The strict geological definition of a mineral as a homogenous solid of inorganic origin has not been upheld by the courts. In one case, the judge commented

that "in one sense natural gas is as rock is, a mineral in that it is not an animal or a vegetable product and all substances found on, in or under the earth must be in one or other of these categories of animals, vegetable or mineral substances" (58), and, under common law, the word mineral is not a definite term, but is susceptible to limitation and expansion according to the intention with which the words were used. When dealing with reservations from grants and actual interests in land, it may include every substance which can be obtained from underneath the surface of the earth for a profit (4), including water (52). However, minerals so defined vary greatly in their geological relationships and economic significance, and the various methods of exploration and development have evolved to take this into account. Thus for ease of administration, minerals in British Columbia, excluding water, are considered under the following groups, each with its own system of tenure and incentives for exploration and development:

- (1) those considered under the Mineral Act\* (27) which defines minerals as including
  - (a) ore of any metal or metals; and
  - (b) every natural substance that can be mined; and
  - (c) every natural substance that occurs in fragments or particles lying on or above or adjacent to the bedrock source from which it is derived, and commonly described as talus,but does not include coal, petroleum, natural gas, building and construction stone, limestone, dolomite, marble, shale, clay, sand, gravel, volcanic ash, earth, soil, diatomaceous earth, marl or peat.

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\* Unless stated otherwise, Mineral Act shall refer to the Mineral Act, Revised Statutes of British Columbia 1960, Chapter 244, and amendments thereof.

- (2) the definition of mineral under the Placer-mining Act (32) is the same, but does not include mineral in place
- (3) coal - considered under the Coal Act (19)
- (4) petroleum and natural gas - considered under the Petroleum and Natural Gas Act (31)
- (5) all other substances excepted from Group 1 and not included in Groups 2, 3, and 4 - considered under the Land Act (26).

Because of the differences in the approach to exploration and development in each group, a detailed consideration of all five groups would be a monumental task, and so this study is restricted to the first group of minerals, which account for the most economically significant sector of the industry - hard-rock metal mining. During 1969, hard-rock mining accounted for \$315,386,227 of the total value of \$464,302,695 for mineral production as a whole in British Columbia (9). Apart from its greater dollar value, hard-rock mining is an important factor in most areas of the Province whereas coal, petroleum and natural gas are more limited in their distribution. By its very nature, placer-mining is also restricted in its distribution, and, accounting for only \$11,720 in 1969 (9), is no longer of any major significance in British Columbia. Although there are many problems associated with the production of minerals in Group 5, these minerals have not been considered because they are the concern of many more organizations than what is commonly referred to as the mining industry and are not usually

the object of large flows of speculative capital.

The study has been further restricted with respect to the ownership of mineral rights. Under section 109 of the British North America Act, 1867, and section 10 of the Terms of Union, 1871, mineral ownership resides in the Province (59). Apart from Crown-granted mineral claims, which were replaced as a form of tenure by mineral leases in 1959 (28), a number of old Crown grants of land which included base minerals, and the alienation of Indian Reserves and National Parks to the Dominion, the Province has retained ownership of mineral rights. Under an agreement signed in 1943, the mining laws of the Province apply to Indian Reserves, and all income collected as a result of the use of Indian Reserves under these laws will be shared equally by the Dominion and Provincial governments (58). Ownership of the precious metals, gold and silver, has been retained by the Province on all lands.

Section 12 of the Mineral Act allows that

"every free miner shall .. have the right to enter, locate, prospect and mine

(a) upon any waste lands of the Crown for all minerals;  
and

(b) upon all lands the right whereon to so enter upon, locate, prospect and mine all minerals is reserved to the Crown and its licencees, for all minerals; and

(c) for gold and silver upon any lands the right whereon to so enter and mine gold and silver is reserved to the Crown and its licencees;



excepting out of all the above descriptions of lands any land occupied by any building, and any land falling within the curtilage of any dwelling-house, and any orchard, and any land for the time being actually under cultivation, and any land lawfully occupied for mining purposes other than placer-mining, and also military or naval reservations .. "

The precious and base metals are so closely associated that they cannot be mined separately \*, and so it is likely that any exploration work will be by agreement with the owner of the base metals. Thus, only Indian Reserves and lands on which the Province has retained ownership of the base minerals will be considered in this study.

#### 1.4 Sources of information

There is little published information on many of the problems considered in this study, and, therefore, much emphasis was placed on contact with those who have had first-hand knowledge of the relationships between the mining industry and other resource interests. Information was gathered both by correspondence and personal interview with government officials and industry representatives.

Much information was gathered from the files of the British Columbia and Yukon Chamber of Mines. Where discretion prevents the discussion of particular cases, the Chamber of Mines is cited as the source of the information.

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\* This was, in fact, one of the reasons which was cited in the agreement over Indian Reserves, mentioned on page 9, which placed all mineral exploration and development under the jurisdiction of the Province.

## CHAPTER 2

### MINERAL EXPLORATION IN BRITISH COLUMBIA

#### 2.1 Exploration techniques

Although metalliferous minerals are widespread in the earth's crust, it is only at certain locations that they occur in sufficient volume and concentration to make extraction economically feasible. Mineral exploration is an attempt to locate these deposits, whose occurrence is relatively rare, and one of the mining industry's major problems is that there is no simple method of doing so.

Mineral exploration techniques have become much more sophisticated since the days of the individual prospector who searched patiently and methodically with such simple tools as pick and shovel. Individual prospectors, who remain an important factor in mineral exploration (24), are virtually restricted to rock outcrops, which cover only about 10% of the Province (33). As much of that area has been subjected to at least cursory examination, the mining industry has been forced to develop methods for locating deposits that are overlain by heavy overburden or rock capping.

Detailed mineral exploration is costly, and so the mining industry must restrict its search to those areas which offer the greatest potential and reduce the investment risk as much as possible. After

each stage, the exploration personnel must decide whether the risk involved in investing in further exploration work is acceptable.

Geological maps, produced by the Federal and British Columbian Governments may indicate those areas which are considered to be geologically favourable to the occurrence of concentrations of metalliferous minerals. On the macro-scale, for example, the Western Cordillera will be favoured over the sedimentary prairie regions. On the micro-scale, what is sought is a geological condition which is different from its surroundings, for example, a rock structure, an abrupt change in rock types, a sign of chemical alteration or some other anomaly which may indicate the possibility of ore deposition.

Mineral exploration is now benefitting greatly from developments in geophysics and geochemistry. The fact that rocks vary in their physical and chemical characteristics has been used on a rather crude basis for several centuries, for example the use of bar magnets to detect bodies of iron ore, but only with the relatively recent development of instruments capable of detecting extremely small variations in a number of physical parameters has the use of geophysical techniques become widespread. By examining certain aspects of the magnetic, electrical, seismic, gravimetric or radioactive behaviour of any area and plotting the values measured at various grid positions, the geophysicist will be able to detect anomalies in physical behaviour.

However, it should be noted that the detection of an anomaly does not necessarily indicate an orebody. The instruments measure physical parameters. They do not indicate what rocks are present. Any set of data is susceptible to a number of interpretations, and so it is highly desirable to have good geological information about the area concerned. Otherwise, further investments might be made on the basis of interpretations which are geologically impossible. Where soil has overlain a mineral deposit for some time, it may contain minute quantities of metallic ions. Certain plants will concentrate these ions in their foliage. By systematically taking samples of soil and foliage, anomalies may be noted. Stream water may also be samples in the hope of detecting upstream orebodies.

None of these approaches to exploration - geological, geophysical or geochemical - can be used by itself to say whether or not an economic mineral deposit exists. They are used in various combinations, depending upon local conditions, to help plan in an efficient manner the next phase of exploration - sampling of the most favourable anomalous areas. In this phase, where the overburden is not too deep, trenches are dug across these areas so that the underlying rock formations may be examined and the quality and the horizontal location and extent of any mineralization determined. Apart from intensive drill sampling, there is no way of definitely determining whether or not an economic deposit exists, but it is highly preferable that drilling be preceded

by surface stripping so that the drill-sites can be planned efficiently. Otherwise, drilling might be ineffective because of the relatively small size of the orebody. Indeed, anyone who has visited an open-pit mine cannot help but be amazed that such a relatively minute body of rock can be pinpointed.

In summary, therefore, mineral exploration consists of a series of stages, each of which furnishes information for those who must decide on further expenditure. The total area under examination is rapidly reduced and the search intensified until drilling operations locate the orebody and allow a decision on whether or not large-scale investment in mine development is economically justifiable.

## 2.2 Acquisition of mineral rights.

Whenever exploration has indicated the possibility of significant mineralization, the free miner, whether an individual or a company, will wish to secure title to any minerals which may exist. This is usually carried out very early in the exploration programme to prevent other free miners from gaining the benefits of one's work.

Every person who wishes to obtain title to minerals or exercise the right to enter, locate, prospect and mine must be the holder of a free miner's certificate, which is available to any person, eighteen years of age and over, upon payment of a fee of \$5 for individuals or

\$100 or \$200 for corporations, depending upon the level of capitalization (s.4)\*. The free miner's certificate must be renewed annually (s.5). Any person wishing to acquire any rights by conveyance or transfer of title must also hold a free miner's certificate (s.11). The only exception to this rule is where someone wishes to acquire shares in a mining or exploration company.

On lands open for entry under the Mineral Act, the free miner can locate and record any number of mineral claims, each with a maximum size of 1500' x 1500' (s.27). Strict compliance with the requirements for locating and recording is essential for a valid claim. Disregard for these requirements is intolerable to other free miners who must rely entirely upon the information filed in the Mining Recorder's office together with the mineral claim posts and location lines on the ground (25). It has long been recognized, however, that the demand for literal compliance with these requirements in the rough terrain of British Columbia may defeat the purpose of the Mineral Act, namely to secure a minimum level of order and stability in mineral exploration and development. Thus, a provision exists in section 39 of the Mineral Act such that

"the failure on the part of the locator of a mineral claim to comply with the provisions .. shall not be deemed to invalidate the location or the recording thereof, if upon the facts it appears that there has been on his part a

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\* This notation indicates the relevant sections of the Mineral Act.

bona fide attempt to comply with the provisions of this Act, and that failure to comply with any one or more of these provisions is not of a character calculated to mislead other persons desiring to locate claims in the vicinity."

One source of conflict was removed with the introduction of witness posts. Where it is not possible to place mineral claim posts in the ground as required by section 27 of the Mineral Act, witness posts may be placed on adjacent, accessible land, indicating the compass bearing and distance to the point where the mineral claim posts would have been (s.30). One example of the type of conflict which used to arise before witness posts were introduced occurred in a case where the free miner had placed one of his mineral claim posts in the surface of a glacier (59). While a strict interpretation of the Mineral Act would have required that he dig down through the ice and place the posts in the underlying ground, this would have resulted in a staking which, because the posts would not have been conspicuous, would have been a trap for subsequent free miners, and it was held that he had done everything possible in the circumstances to comply with the Mineral Act and that his staking had been carefully designed to avoid trespass and to give the best possible marking for the benefit of subsequent free miners.

The free miner now has a mineral claim on which he alone, or any

of his agents, is entitled to explore and mine for all minerals for a period of one year (s.15,16,17). The claim may be renewed annually if, during each year, work involving actual exploratory or mining operations has been carried out to the value of \$100 or the sum of \$100 has been paid in lieu to the Mining Recorder (s.51,54). Where the claim has been surveyed by a Provincial land surveyor, part of the cost of the survey may be charged against the work requirement (s.56). Subject to approval from the Department of Mines, road and trail construction may be counted as assessment work for one year during any one of the first three years, but such work shall not be accepted in any later year (s.51). Claims, not exceeding forty in number, may be grouped, and the work required for all may be performed on any one or more of these claims (s.51). Excess work may be counted against work requirements in future years (s.53).

If the claim holder wishes to acquire greater security of tenure, he can obtain a 21-year, renewable mineral lease. However, the costs of holding a lease are quite substantial compared with the work requirement of mineral claims, and even the larger companies do not acquire mineral leases until production is assured. Thus, mineral exploration will usually be carried out under the terms of mineral claims rather than leases. However, if any site proves especially interesting, the free miner may have his claims surveyed to ensure that there is no misunderstanding about the actual location of the claim.



### 2.3 The exploration environment in British Columbia

Climate and terrain are major factors affecting mineral exploration in much of British Columbia. In many places, the severe climate, particularly through the impact of snowfall upon access, limits the length of season during which exploration work can be carried out. The rugged terrain also makes access difficult, especially for the individual prospector.

Although the nature, location and extent of the work are planned to some extent before the exploration programme is started, field observations may cause even the most flexible of plans to be changed at very short notice. Thus, it is difficult to keep track of what is going on in any one area. The large number of people involved and the isolated nature of mineral exploration also make it an activity which is very difficult to regulate.

The British Columbia and Yukon Chamber of Mines estimated that

"each season some 2,000 people are involved in prospecting activity. At least 1,000 of these are highly experienced 'grass-roots' prospectors, while the balance are geologists, geophysicists, geochemists and university students." (48)

## CHAPTER 3

### ENVIRONMENTAL IMPACT

#### 3.1 The effects of mineral exploration

By its very nature, mineral exploration involves some disturbance of the environment. Vegetation will be destroyed by surface trenching operations. Trees must be cleared to provide sites for drilling equipment, and they must be cleared or blazed to mark the location of grid lines. The building of access roads and exploration trails, airstrips, helicopter pads, campsites and storage areas also necessitates some disturbance.

Erosion is a potential problem whenever vegetation is removed and the land surface disturbed. Seismic lines and the havoc they have wrought in Alberta immediately spring to mind, but this technique is mainly restricted to oil and gas exploration and is not of much concern in hard-rock mining in British Columbia (64). However, blasting, road and trail construction, trenching and any other operation involving bulldozers are potential sources of erosion problems.

Roads and trails are built on a short-term basis to provide the cheapest access for exploration equipment. They are usually made by running a bulldozer through the vegetation, and the surface is no more than the underlying soil. Roadside ditches are seldom dug, and stream crossings are usually fords or log culverts. Hillside roads

intercept surface drainage, and, on steep slopes, roadside streams develop, scouring channels and carrying heavy loads of sediment. In mountainous areas, cut-and-fill road construction, trenching and the levelling of sites for drilling equipment may lead to unstable slopes, and any resulting slides will cause deterioration of downhill vegetation. Unstable slopes may also encroach upon stream channels and set up conditions of instability that persist for many years. The alteration of normal surface and sub-surface drainage patterns may have serious consequences. Damage to stream banks, blockage of stream channels and sedimentation cause changes in stream profiles, reduce the storm-carrying capacity of the watercourses and increase the danger from flash floods.

In British Columbia, increased sediment loads may have serious consequences because of the importance of water resources management (68). The effects on salmonid fishes have been well documented (44), and any deterioration in water quality may have important consequences for domestic and industrial consumers downstream. In certain situations, sedimentation may also cause the premature silting-up of dams.

In addition to erosion, the disturbance of vegetation may also have an impact upon wildlife values. In some instances, the effects may be detrimental to local wildlife populations, but in areas of dense forest cover, clearing may provide a valuable diversification of habitat as long as natural revegetation ensues.

### 3.1.1 Forests

At one time, the low intensity of the impact of mineral exploration upon the forest resource was such that the Forest Service either did not notice it, or if they did, merely ignored it (53). However, the rapid increase in exploration activity which occurred several years ago coincided with a period during which the Forest Service was also trying to put pressure on the forest industry to do a better job (53). At that time, the Forest service became seriously alarmed at the impact of mineral exploration. The main points of concern were that

- "(1) slash is not disposed of, leaving very severe hazards from both fire and disease;
- (2) in many cases, access roads are not properly located, and much destruction takes place where the bulldozer operator makes several attempts to get through;
- (3) timber is destroyed because little or no care is taken to avoid destruction." (13)

Submissions were made to the Select Standing Committee on Forestry and Fisheries, which recommended in March 1967 that, before further legislative powers were enacted, a one-year trial period be granted for voluntary control of damage (15). As a result of these recommendations, the Department of Mines issued a "Notice to all free miners and

all persons engaged in mining exploration", which stated that

"every effort must therefore be taken to minimize destruction of standing timber as well as the destruction of surface capable of perpetual yield. It need not be construed that legitimate mining exploration work will be unnecessarily hampered by the need for sensible conservation of forest growth, but it is essential for all those in the mining exploration field to recognize that failure to co-operate in carrying out the requirements detailed herein will result in stringent official regulations to the probable detriment of the mining fraternity." (13)

Section 10 of the Mines Regulation Act (29) requires that the District Inspector of Mines be notified of any exploration or development work. To facilitate the enforcement of this section, the Department of Mines produced a form entitled "Notice of opening of a mine or quarry, or of work on a mineral property" (12) (see Appendix). Two copies of this form were required in order that a copy might be forwarded to the District Forester. A circular letter to all District Foresters indicated the policy and procedures to be followed in the enforcement of those sections of the Forest Act (23) dealing with hazard abatement and the assessment of timber values (17). On receipt of the "Notice of opening", the District Forester would send the operator a form letter setting out the requirements of the Forest Act and requesting him to contact the District Forest Ranger (16). A copy of the letter would also be sent to that Ranger.

In 1968, after one year, the Forest Service submitted a report to the Select Standing Committee stating that, in spite of a lack of applications for Licences to Cut, which its policy demanded, all forest districts reported a general willingness to co-operate with the Forest Service (15). There had been a heavy fire season, which had prevented several districts from maintaining close contact with mining operations, and there had not been time to acquaint all operators with the policy or to judge its effects, but the general feeling was one of optimism and that, with more publicity and education, the policy could work.

In March 1969, the Select Standing Committee observed that there was a delay between the submission of the "Notice of opening" to the District Inspector of Mines and the copy being forwarded to the Forest Ranger. Thus, in many instances, the exploration work had been carried out and the operator had abandoned the site before the Forest Ranger had had the opportunity to contact the operator. The Select Standing Committee then recommended that the operator mail a copy of the "Notice of opening" directly to the District Forest Ranger (18).

Despite the continued increase in mineral exploration and the corresponding increase in paper-work and inspection duties, it would appear that the voluntary measures to prevent unnecessary damage and reduce hazards from fire and disease have been generally successful (18).

This is not to say that the problem has been completely solved. The Forest Service is still concerned about the construction of roads without any proper planning and without proper disposal of slash. (41).

### 3.1.2 Grazing lands

The British Columbia Beef Cattle Growers' Association also made representations to the Select Standing Committee on Forestry and Fisheries in 1967 about the damage being done to grazing lands by careless and negligent bulldozer operators (37). Certain types of pasture were being irreparably destroyed, and increased erosion was causing serious problems. Surface trenches were a hazard to cattle. This type of damage still occurs, and unless the rancher has some agreement with the free miner, trenches are not usually backfilled (61). The rancher may or may not reseed the area himself.

### 3.2 The control of environmental damage.

When legislative controls for the reclamation of mined-lands were first considered, the exploration phase of the industry was also included. However, it was claimed that the amount of administrative effort necessary for such control would be impracticable. Certainly,

the scattered and isolated nature of mineral exploration and the preparation of reports in such detail as required by Section 11 of the Mines Regulation Act would be impracticable for many exploration programmes which last only a few weeks. Thus, when the reclamation legislation was incorporated into the Mines Regulation Act, the exploration phase was excluded from its jurisdiction.

The rather concentrated nature of coal deposits and the tenure system of leasing under the Coal Act (19) allow much closer control to be exercised over coal exploration. In April 1967, the reclamation provisions of the Coal Mines Regulation Act (20), which are identical to those covering hard-rock mining, were applied by Order in Council to all coal mines in the exploration stage "where the employment of mechanical equipment has disturbed or will disturb the surface of the land in clearing, stripping, trenching and such other operations as have or may be considered to cause significant disturbance of the surface of the land." (10).

As with the original introduction of the reclamation legislation, the government is obviously, and perhaps wisely, being very cautious about the amount and type of control to be exercised over an industry which does not lend itself to easy supervision. However, some form of environmental control over mineral exploration will be necessary in the future. At present, the submission of a "Notice of opening" does not guarantee the minimization of environmental impact. The form of



any future control measures is difficult to predict because of the lack of knowledge of all of the effects and their remedies. Detailed regulations cannot be drawn up unless this information is available. Until this information is forthcoming, it may be advisable to follow along the lines suggested in Section 5.2.

### 3.3 The public image.

The mining industry has had a reputation for abandoning useless equipment and materials, for not clearing up campsites and storage areas and for being generally untidy. Although there is still much to be done, it should be noted that many companies are aware of this blot on their public image and are taking steps to erase it (63).

It would be naïve to think that everything possible is being done. Examples of complete disregard for the impact upon environmental and aesthetic values still occur (61). However, discussions with many people have revealed a marked change in the attitudes within the mining industry over the past few years, and this trend must be encouraged.

### 3.4 Assessment of forest values.

Subsection 21(2) of the Mineral Act and subsection 10(1) of the Forest Act are conflicting pieces of legislation in that one allows the

free miner to make use of the timber on his mineral claim while the other states that, without a licence, it is unlawful to cut any trees which have been reserved to the Crown. The Forest Service informs the free miner that

"with the accelerating mining development and exploration activity throughout the Province, the loss of timber values resulting from such activity has become a matter of considerable concern. Because of the need for sustaining the supply of raw material for the forest industries, it is essential that every effort be made to utilize as much as possible of the merchantable timber being removed for mining purposes. Where this cannot be done, it is essential that a charge be made for timber destroyed, as it represents an asset belonging to the people of the Province." (16)

Although Forest Service policy has always been that all timber must be accounted for, the extensive and often isolated nature of mineral exploration would appear to have prevented the rigid enforcement of the Forest Act in the past (53). It is claimed by some free miners that only with the voluntary programme for the abatement of forest damage in 1967 and the submission of "Notices of opening" did the Forest Service have the opportunity to begin charging stumpage (36).

When a mining operator is cutting timber on a mineral claim for use on that claim, no licence to cut is required nor is any stumpage or royalty charged even although, under strict interpretation of the Forest Act, royalty should be paid (41). This also applies when

timber is used in the construction of access roads: the Forest Service recognizes road building as an improvement to mineral properties (41). In all other situations, a licence to cut is required, and the following procedures have been established by the Forest Service for dealing with stumpage charges arising from mineral exploration, whether on mineral claims or not. The policy concerning the payment of stumpage for timber cleared during the building of main mining roads is not to bill for any timber used for road construction (41). If there is any merchantable timber not required for road building purposes, the free miner is expected to deck logs for disposal by the Forest Service. When the timber is sold, the free miner is reimbursed for reasonable costs of felling and decking. Where timber is knocked down and destroyed, the free miner will be billed for its appraised value. There is no charge for immature timber destroyed except where there is unnecessary waste. Where timber values are destroyed during the construction of temporary mining roads or during other exploration activities the same procedure will be followed as for main access roads except that an assessment is made for immature timber destroyed (16). When temporary access roads are not built over mineral claims, a charge will be made for any timber used in their construction. "Where the destruction of timber is of such intensity as to leave only scattered trees of marginal residual value, the timber, including immature, on the entire area so affected will be considered destroyed and waste

charges assessed accordingly" (16).

Although many free miners have been paying stumpage bills, there are many who have refused to do so (36). They consider that subsection 21(2) of the Mineral Act allows them to do as they please with any timber on their mineral claims. In the past, they have used the argument that surface stripping and road building are operations connected with the business of mining and claimed that they should not be charged for any timber cut during such operations. However, the Forest Service recognize these activities as a part of mining, and the problem really revolves around the definition of the word "use". When free miners were first given the right to the use of timber for mining purposes, what was contemplated was the physical use of timber for pit-props, sluices, etc. Timber was essential to the development of a mineral claim, and the right to use timber on that claim was an incentive to that development. The use of heavy machinery and the need for extensive road building were surely not envisaged in the middle of the Nineteenth Century when mineral legislation was first enacted in British Columbia. Although surface stripping and road building must be considered as operations connected with the business of mining, they do not always involve the use of timber, but its destruction!

The mining industry objects on principle to paying stumpage, even where the legislation states clearly that timber must be paid for (3, 33, 36). Free miners are interested only in minerals -- they do

not want to become involved in the logging industry with all the extra work of decking logs. Many exploration companies consist of only a handful of geologists and so they are dependant upon the local availability of labour and machinery if they are forced to cut and deck logs as distinct from burying or windrowing them. (63). Free miners object to paying for timber which cannot be marketed and point out that, even where the operations of the forest industry provide a market nearby, that market is often saturated with the output of local logging companies. They argue that the trees which are cut or destroyed in the course of their operations are of negligible value when compared with the value of mineral production in British Columbia. This is a poor argument against stumpage charges because the timber may be quite valuable locally, but it is given credence when, in some instances, the scaling costs are almost as much as the value of the timber being assessed (36).

Certainly, one must draw the line somewhere, and the Forest Service must endeavour to account for all timber cut or destroyed, but a blanket provision that all timber, with a few exceptions, must be paid for ignores the fact that the real problems lie in determining the costs and how to allocate them. One must consider the benefits of timber removal - for example, increased wildlife values and access for recreation and forest management activities -- and compare them with the costs - the destruction of the forest resource, damage to environmental and aesthetic values and inconvenience to forest managers. If timber removal does not interfere unduly with the operations of the forest

industry and does not have a significant impact upon its commitment to sustained yield management, the control of environmental and aesthetic damage as discussed in section 3.2 should suffice. Timber, as distinct from forest cover, is only an asset when it can or will be used in an economically efficient manner. It should also be remembered that an increase in exploration costs due to stumpage payments would not result in a corresponding increase in our knowledge of mineralization.

If it is decided that the mining industry must pay for the timber cut in the course of its operations, the allocation of that cost is important. By charging the individual free miner for timber damaged during mineral exploration, the Forest Service is certainly placing the responsibility on those actually causing the loss of timber values to the Province. However, only a very few free miners make a substantial, or indeed any, gain from their activities, and it would perhaps be fairer to allocate these costs, in the form of royalties or taxes on production, to those sectors of the industry that are actually reaping the benefits from successful exploration.

## CHAPTER 4

### RESOURCE MANAGEMENT IMPACT

The growing interest in all of British Columbia's natural resources emphasizes the need for co-operation between all resource interests: each must act to eliminate needless conflict.

#### 4.1 Notification of exploration activity.

One of the major obstructions to achieving this co-operation is the fact that, although a large area of the lands open for mineral exploration are lawfully occupied for other purposes, there is no overall provision which requires the free miner to notify the owner or occupant of the land surface of his presence. On lands administered under the Park Act (30) and the Indian Reserves and Mineral Resources Act (24), the free miner must obtain permission from the respective government agencies before he can exercise any rights under the Mineral Act. However, on all other lands, the free miner can enter and stake claims without notifying anyone but the Mining Recorder of his presence, and even then, not until after staking has been carried out. Although the free miner is required to submit a "Notice of opening" to the District Inspector of Mines and the District

Forest Ranger for any exploration work, he is not required to notify the legal occupant of the land of his proposed activity. Even on private lands, there is no statutory requirement to notify the owner although an information pamphlet issued by the Department of Mines states that

"free miners, who enter on private land .. must, in the interest of harmony, contact the occupant prior to commencing work. Free miners who describe the nature and extent of work planned on their mineral properties will find that conflicts of use with land owners can often be resolved amicably." (11)

Information about the existence and status of mineral claims in any area can be obtained from the Mining Recorder's office or by carrying out a search for claim posts on the ground. The recording of claim locations in the Mining Recorder's office leaves much to be desired and has been the subject of a brief to the Provincial government by the British Columbia and Yukon Chamber of Mines (35). Unless a claim has been surveyed or the free miner has a good knowledge of local geography, the actual location of the claim can be as much as several miles from that indicated in the official documents. Discussions with several people involved with the mining industry have revealed that this confusion may be compounded by the fact that instances have been known where claim locations were indicated falsely in a deliberate attempt to mislead other free miners. The Department of Mines plots the location of mineral claims on a series



of maps produced by the Legal Surveys Division showing all other forms of land alienation. However, in certain districts, there are so many claim recordings that there may be a considerable delay in transferring locations to these maps. Thus, even if locations are recorded accurately, there is no guarantee that any land indicated as being unoccupied at a particular time is necessarily so.

Even if a ground search for claim posts were carried out, there is no guarantee that new claims would not be staked between the time of that search and the beginning of any particular operation. For example, on one Tree Farm Licence, the forest company was going to carry out a slashburn when it was discovered that several mineral claims had been staked during the few weeks since the logging operation had been completed (69).

This lack of information about the existence and status of mineral claims was also pointed out by the Public Land Law Review Commission (73) in the U.S.A., where Federal land agencies often have no knowledge of the activities of claim holders unless they apply for patents, a type of Federal deed which conveys to the locator legal title to the land within his claim. The Commission considered that this was not consistent with sound land management and recommended that "locators be required to give written notice of their claims to the appropriate Federal land agency within a reasonable time after location". In British Columbia, it is also essential for

land planners and managers to have all the relevant information on the legal status of the land. Where land is being considered for alienation, the Department of Lands, Forests and Water Resources must know of any prior rights. Surface operators must know of any mineral exploration activity so that they are in a position to respect the rights of the free miner. It should remain the responsibility of these surface resource interests to determine the existence of other land rights, but, until some more satisfactory method of recording the location of mineral claims has been developed, it would be preferable if the free miner notified the Forest Service or the owner or occupant of the land surface of the existence of his claim as soon as possible after it has been located.

Many areas of British Columbia are now under some form of management, which may have involved some considerable investment. These other resource managers are entitled to know of everything which may affect their resources or their decisions regarding these resources, especially in those situations which involve them in additional expenditures or reduce the value of their investments. The British Columbia Beef Cattle Grower's Association is currently working on an amendment to the Mineral Act whereby the free miner must notify the owner before beginning any exploration or development work on private land (38). Under present legislation, however, surface occupants may have made substantial long-term investments in land which they hold under permit or lease, and so there is also a good argument for requiring the free

miner to notify all types of surface occupant of his proposed work.

Under the present system of mineral laws, it would not be practical to require prior notification of intent to stake mineral claims because that would allow the surface owner or occupant to stake claims on that land before the free miner had had a chance to do so. There would also, therefore, be some objection from the mining industry to requiring notification about any disturbance of the land surface that might be necessary in staking mineral claims. In the past, one of the major objections to notification of exploration activity was the deep-seated fear of divulging confidential information which could be of value to rival free miners.

"Under existing legislation, Forest Service personnel can and do hold Free Miner's Licences and can and do stake claims. While the Chamber knows of no case where privileged information was used by Forest Service personnel for their own benefit, there is obviously the possibility of a conflict of interests. To obviate this, the Chamber feels that the Forest Service should deal with mining and exploration groups through the Department of Mines and that any subsequent information should be treated as confidential." (33)

Objections such as these should not deter the government from requiring notification of any disturbance if that notification is necessary for the rational development of British Columbia's natural resources. However, the interests of the free miner must be safeguarded, and if the Forest Service is to be handling information about mineral exploration, its situation should be brought into line with that of the Department

of Mines so that its personnel are not permitted to hold any interest in any mineral claim. It would appear that there might also be good reason for preventing surface owners or occupants from staking claims without first having notified the Mining Recorder of their intent to do so. Then, if any conflicts arose because a free miner had informed the surface occupant of his exploration plans, a decision on the rights of each individual could be made relatively easily.

#### 4.2 Interaction with traditional extractive industries.

Investigations revealed that the following were the main points of concern both now and during the past few years.

##### 4.2.1 Mineral claim posts

Section 125 of the Mineral Act makes it an offence to tamper in any way with legal posts, survey monuments or metal identification tags. Until quite recently, however, very few people in the forest industry realized the significance of claim posts. One of the problems was that tree fellers could not recognize claim posts or assumed that many of those which were found marked old, abandoned claims, even though metal identification tags on claim posts indicate active claims. The forest industry is now trying to train its employees to recognize claim posts (65). If claim posts are found, the forest company must

attempt to find out whom the claim belongs to and notify the free miner or protect the posts either by adjusting its operations slightly or be referencing the posts and replacing them after the work has been completed (65).

In the autumn of 1970, one free miner was informed that the whole area surrounding his claims would be logged off and subsequently slashburned (36). He wished only that his claim posts be protected so that he might be able to prove identity, but considered that protection to be the responsibility of the logging company. When he sought the help of the Forest Service, he was informed that there was no ruling regarding the preservation of existing claim posts. This undesirable state of affairs should not occur in the future, however. Under present practice, if the Forest Service is informed that damage has occurred or will occur, the forest operator will be advised to repair the damage immediately or will be informed of the rights of the free miner (41).

Apparently, there is still a problem with persons who stake claims as a nuisance in order to claim damages or obstruct road development (60). The forest company may have recourse to section 124 (1)(e) of the Mineral Act, which provides that the Lieutenant-Governor in Council may "order the cancellation of the record of a mineral claim where it has been acquired and held for purposes other than for working as a mineral claim", but it may prove impossible to prove one's case.

#### 4.2.2 Road building and timber cutting

Unco-ordinated road building is one of the main problems in the mining-forest industry relationship. It is inefficient for exploration companies to build access roads which subsequently cannot be used by logging companies because they have been located on the wrong side of a valley or are not of a suitable standard. Although the forest industry has no control over where the free miner wishes to operate or what timber he wishes to remove, consultation allows the logging company to suggest a location for proposed roads that would complement its own development plans. One forest company has stated that, if the miners were not willing to cooperate, it would be prepared to build the road itself to prevent wasteful duplication (56). Consultation also allows the logging company to adjust its logging plans to remove salvagable timber felled as a result of exploration work. This non-scheduled road building and timber removal is costly because it seldom fits in with current operational plans, but on Tree Farm Licences, it is a cost which often has to be borne in order to protect long-term forest management commitments (56).

#### 4.2.3 Sample plots and damage to exploration work

Another major problem is the protection of forest yield sample plots. Financial compensation under subsection 12(3) of the Mineral Act is completely inadequate. Although sample plots may represent

a considerable financial investment, the critical factor is the time it has taken to accumulate data on the growth behaviour of the trees and the essentially long-term nature of the exercise.

A parallel problem occurs with the grid lines which are often necessary in modern mineral exploration work. It is difficult to avoid damaging these grid lines during harvesting operations, and so it is important that some attempt be made to co-ordinate exploration and forestry activities. For example, if an area under exploration is scheduled for logging within a month or two, it may be advisable to delay setting up the grid lines until after logging has been completed, or vice versa. However, this would depend upon the length of the exploration season. Where the Forest Service is aware of conflicts with mineral claims, it inserts a special proviso into tenures issued under the Forest Act (41). Thus, the forest tenure would be suspended if there was any damage to exploration work on mineral claims. In some instances, the forest operator may be required to deposit a cash bond with the District Forester. Where the Forest Service is informed of any damage, the forest operator is advised to repair the damages immediately.

However, because of the difficulty in recognizing both sample plots and grid lines, the only real solution to these problems lies in consultation to ensure that all relevant information is obtained and in co-operation during the planning of all operations.

#### 4.2.4 Fire Hazard

During periods of high fire hazard, the Forest Service must know who is in the forest. Not only is this in the interests of the free miner himself - slashburns have been known to spread beyond their intended limits, and forewarning or evacuation can be carried out only if the Forest Service knows where people are - but the Forest Service must know of all potential sources of fire.

Miners have been complaining about subsection 122(1) of the Forest Act, which deals with forest closures, because prospecting is grouped along with travelling, camping, fishing, hunting and recreation. However, it would appear that this is mainly a matter of pride. Most free miners fully realize that, when the fire hazard rating reaches a certain level, everyone must leave. They merely wish to have a few days longer than these other groups of people (63). Perhaps, in some situations, it would be possible to evacuate the exploration crews at the same time as the logging crews are forced to leave the forest.

In areas where severe climatic conditions limit the exploration season, prolonged fire closures may prevent the implementation of exploration programmes. The work requirement still stands, however, and if the free miner is unable to carry out his exploration work, he would be required to pay the value of the work requirement. If it can be proved that exploration work was intended, the work requirement should be waived. The free miner should not be placed at such a dis-



advantage within the mining industry because of the necessity to protect other resources.

Protestations about miners having spent a lifetime in the bush and being responsible men are irrelevant; accidents are always possible. In fact, however, exploration crews often act as very effective fire spotters, especially if equipped with helicopters, because mineral exploration covers such a large geographical area; there have been many instances where exploration crews have either extinguished or reported fires for which they were not responsible. (63).

A potential source of conflict involves the joint occupancy of land where mineral claims are superimposed upon Tree Farm Licences. Where the cause of fires cannot be established, there is a problem of establishing a mutually acceptable allocation of costs incurred in fire fighting (74). As was mentioned earlier, the Tree Farm Licencee has no control over where the free miner wishes to operate, and one forest company considered that it was unfair that, when the free miner is actually occupying the land, it had to bear the responsibility for that free miner merely because the mineral claim lies within the boundaries of its management unit (74). However, where the cause of a fire cannot be established, it would be difficult to justify any suggestion that the free miner should be required to meet any part of the costs incurred in fire fighting. The free miner does not gain by fighting the fire; it is the long-term interests of the forest company that are being protected.

#### 4.2.5 Grazing

As previously mentioned, mineral exploration may destroy valuable pastures and create conditions which are hazardous to cattle. If the rancher is notified prior to the commencement of work, much of the impact may be reduced. For example, if he knows that a particular area is going to be worked, he can move his cattle to safety. If the work is going to destroy a hayfield, he can salvage the hay before it is buried by a bulldozer. The rancher also wants to know of any exploration activity so that he can arrange for security and compensation for damage caused by the free miner. This matter will be discussed in section 4.4.

#### 4.3 Consultation and co-operation

As has been implied in the preceding section, much of the impact of mineral exploration may be reduced by consultation and co-operation with other resource managers.

At present, many free miners will consult and co-operate with the various resource managers involved, and there appears to be little problem with most of the larger exploration companies and those who are in the mining business to stay (65, 67). The trouble comes with the "fly-by-night" types, an expression which cropped up many times in communication with the forest and grazing industries. As the British

Columbia Beef Cattle Growers' Association has said, their proposed amendment

"would not inconvenience good operators, for they already practise courtesy and notify the surface rights holder before digging up his land. It would help immensely to bring those who are ignorant of the damage they may cause or to whom they may cause it into contact with the surface rights holder in time to avoid the unpleasant confrontations that usually occur. In many cases we have found that a mutually satisfactory arrangement can usually be worked out." (67)

One Tree Farm Licencee stated that it is relatively simple to reach agreement, except for the time required to process it through the necessary channels of authority (60). In this regard, it is worthwhile noting his comment that

"the regulations are "cumbersome" in some respects, but this is mostly the measure of the prospector's or developer's unplanned activity and anxiety to act today and the time and paper consumed in the applications to Mines Department, B.C. Forest Service and ourselves and the general lack of factual detail in his presentations. Where we are the land "manager", there could be some simplicity if such submissions were first submitted to us, since this would result in all points being agreed upon and thus produce quicker official reaction." (60)

#### 4.4 Security and compensation

Under subsection 12(2) of the Mineral Act, the free miner may be required by the landowner to give adequate security for any loss or damage which may be caused by entry. If the free miner refuses to

give such security, he no longer has any right to any mining property on that land. Thus while the landowner cannot prevent the free miner from operating on his land, the security may be set at such a high level as to cause the free miner to abandon his exploration plans (see Section 4.5.1).

The amount of security is determined by the Gold Commissioner or Mining Recorder. The British Columbia Beef Cattle Growers' Association has found that there may be a problem in arranging a high enough value of security. "Whether or not security is satisfactory depends on the Gold Commissioner (or Mining Recorder). Too frequently he may be (a) completely oriented toward the mining side and/or (b) unfamiliar with range/agricultural values." (61). As the Cattle Growers' Association states, the amount of security depends very much upon the individual Gold Commissioner or Mining Recorder, and it would appear that in some instances adequate levels of security are set (54).

If damage is done, subsection 12(3) of the Mineral Act requires that the free miner shall make full compensation to the owner or occupant of the land. If there is any dispute, such compensation will be determined by the Courts, even although the original security may have been determined by the Gold Commissioner or Mining Recorder. It is interesting to note that whilst both owners and occupants of land can request compensation, only landowners can request security and that security against damages on Crown lands is not covered by section 12 of the Mineral Act (7). The old Land Act (25), which was repealed in

1970, stated that "nothing herein contained shall be construed so as to interfere prejudicially with the rights granted to free miners under the Mineral Act .. but the free miner, prior to .. (searching for and working minerals) .. shall give full satisfaction or adequate security, to the satisfaction of the Gold Commissioner, to the pre-empter, lessee, licensee or tenant in fee-simple for any loss or damage he may sustain by reason thereof ...." However, Hanrahan (54) found that the satisfaction of this provision had never been the common practice of the mining industry and in fact spoke to individuals who had been unaware of its existence. One could, perhaps, argue that only landowners and not occupants should be allowed to request security because occupants are unlikely to have as much capital invested in the land. However, the new Land Act (26) does not permit the complete alienation of land ownership until the conditions of the licence or lease to occupy that land have been fulfilled. Thus, because a considerable amount of time, effort and capital may be invested during that initial period, it may be desirable to allow the occupant to request security.

#### 4.5 Other resource management impacts

In the preceding sections, mineral exploration was discussed in relation to other natural resource interests which involve the sustained harvesting of a natural resource from a fixed land base, and it was concluded that mineral exploration could co-exist with industries such as forestry and ranching. If a mine was developed, these industries

could still exist outside of the immediate area required by the mining operation. However, other forms of resource management may require additional safeguards to ensure their success.

#### 4.5.1 Water resources

Any activity which increases sedimentation or damages water-courses will have an impact upon water resources as discussed in Chapter 3. Erosion control measures should prevent much of the damage, but a system of land-zoning may be required to protect susceptible areas which are of particular importance in overall watershed management - for example, the watersheds of the Greater Vancouver Water Board.

Hanrahan (54) cites one example where a real estate development company held a water licence for the use of springs in the hills above the site where a sub-division was being developed and an exploration company wished to do some stripping in the area of the springs. Because of the potential for damage to the springs and an estimated cost of \$100,000 for providing an alternative source of water, the Gold Commissioner required a security bond of \$100,000. The exploration company could not afford to put up such a bond, and its exploration programme was abandoned in that area.

One must speculate about what would have happened if the exploration company had been able to put up the bond. Could damage be tolerated even if the bond was forfeited? In some instances, the assessment of

security may not be as realistic as in the example cited above.

Etter (50) considers security bonds of doubtful value because bonding implies that the environment can be traded off against dollars.

This view is borne out by personal discussions with several people involved with the petroleum industry in the north.

One must also look beyond the exploration phase. Even if the detrimental effects of exploration can be reduced to an acceptable level, the development and operation of a mine and its associated activities such as milling and smelting may be unacceptable. The mining industry must know whether or not it will have the right to mine an orebody before it makes a decision to invest in exploration. The time to regulate industrial activity is before and not after private enterprise has spent millions of dollars in mineral exploration. Thus, as already mentioned, protection of particular watersheds may necessitate their withdrawal from mineral exploration.

#### 4.5.2 Recreational, aesthetic and ecological resources

Mineral exploration has had a significant effect upon the recreational resources of the Province. Mining roads and trails have opened up large areas of the Province for hunting, fishing, walking, climbing, picnicing; camping, nature study, etc. Although this impact is often beneficial, it may have serious ecological implications. For example, access may lead to intolerable pressures on fish and wild-

life populations, and a large influx of hikers or pony trekkers to an alpine meadow may destroy that delicate ecosystem.

Mineral exploration may result in a loss of scenic values and a loss of amenity of lakes and streams from increased sedimentation, and the noise of heavy machinery and blasting operations may be a source of irritation. Some of these effects are of a temporary nature, and some may be prevented by erosion control measures. However, although many types of recreation are not significantly harmed by the presence of mineral exploration, some forms of recreation are completely incompatible with any industrial activity whatsoever. These forms of recreation can only be provided for by setting aside areas for their exclusive satisfaction. These particularly demanding forms of recreation involve the enjoyment of a natural environment undisturbed by man. It may also be necessary to withdraw land from mineral exploration to protect sites of outstanding natural beauty or historical importance and to protect ecological values, such as representative ecosystems or individual endangered species. Where there is sufficient demand, areas may also be set aside and intensively managed for other recreational pursuits such as skiing, camping, etc.

Crown land may be withdrawn from prospecting under the Park Act (30) and the Ecological Reserves Act (21). "Ecological Reserves include some outstanding samples of areas where natural processes will be allowed to proceed undisturbed" (68) and thus are completely withdrawn



from prospecting. However, some of the larger parks were established without much consideration of other resource interests, and so a two tier classification has evolved such that mining companies may be allowed to operate in certain areas of Birkenhead Lake, Kokanee Lake, Muncho Lake, Stone Mountain, Strathcona, Tweedsmuir and Wells Gray Class "B" Provincial Parks. No park-use permits for prospecting will be granted in Class "A" Parks, in parks of less than 5,000 acres or in any nature conservancy area (14). Under section 8 of the Park Act, prospecting is permissible in the Class "B" Parks listed above as long as it is not "detrimental to the recreational values of the park concerned". On this basis, government policy with respect to mineral exploration is as follows:

- "(1) Prospecting in specified areas of a Class "B" Provincial Park may be carried on under a letter of Authority from the Director, Parks Branch ..
- (2) The recording of mineral claims will not be approved within
  - (a) one half mile of any lake 1 sq. mile or larger;
  - (b) across or within 100 yards of any water course where the mean water flow exceeds 1000 c.f.s.;
  - (c) where a lake is considered to be of major importance to a park area, the restriction of one mile from the shore may be applied, and notice of such restriction will be contained in the letter authorizing prospecting.
- (3) Any claim recorded shall, with proper restrictions as to park preservation and maintenance, be recognition of the right to mine the claim so recorded." (14)

The mining industry in British Columbia is not against the alienation

of lands for parks per se, but it does object to the creation of large wilderness and nature conservancy areas (48). Because Ahrens (2) recommends a minimum size of 100,000 acres for wilderness-type parks, there is bound to be some conflict of interests. Again, one must note that mineral exploration cannot be permitted where mining itself is undesirable. With reference to the U.S.A., and these sentiments are echoed in British Columbia (48), Herbert (55) stated that

"our nation's industrial civilization may face a most serious threat to its continued existence through the loss of potential mineral deposits by closure of vast areas to mineral exploration and development. In spite of repeated warnings that we must increase the rate of discovery of the minerals we now use so lavishly in industry, large areas of land continue to be classed as wilderness and to be withdrawn from use by more than the few who can afford and are willing to penetrate the wilderness. A single purpose withdrawal of land may be as damaging to future generations as any of the thoughtless explorations of the past have been."

In the competition of the market system, however, where the object is financial success, and in government, where non-market objectives are of a prestigious nature, resources have become ends in themselves (71). It should be remembered that natural resources are only a means of procuring public welfare. Idealistically, activities such as mining are undertaken to fulfill social needs and purposes, and "if raw material production and consumption are anti-thetic to other societal values, the public must choose among them"(1). Certainly, a rising population and increasing industrialization will

affect Canada and British Columbia no less than they do the rest of the world, and the production of all kinds of resources must increase. However, these resources also include recreational, aesthetic and ecological resources, and with increasing pressures on land for development, the only means of ensuring that certain of these will be available for posterity is by land withdrawal. Preservation plays a significant role in the provision of a full range of outdoor recreation opportunities (46).

The Provincial Deputy Minister of Mines has expressed deep concern at "the apparent rush to alienate land in perpetuity for other purposes before it can be ascertained whether or not minerals capable of commercial development are located in a given area" and submits that "it is equally important that we protect the right of future generations to mineral resource development from which they may be assured an opportunity to create an economy commensurate with their times." (6). This statement contains two basic fallacies. The first is that any minerals in park areas could be limiting to our survival - that, unless parks are mined, there will be a shortage of minerals. However, if there were a shortage, the mining of parks would only delay the necessity for recycling and substitution by a few years. Is the loss of wilderness areas balanced by the delayed costs of the inevitable? The second fallacy is that mineral resources have been locked up in perpetuity. Any minerals in parks can be searched

for and mined whenever society so demands, whereas the wilderness value of the land could be lost forever if any mineral exploration were permitted. For this reason, should British Columbia not retain the choice of wilderness or mineral development until that time when no alternative mineral sources exist and when a more realistic assessment can be made of the relative values of aesthetic satisfaction and material welfare?

One of the Deputy Minister's points is well made, however. The selection of areas for withdrawal as parks or ecological reserves should be a positive action in overall land-use allocation considering all natural resources. There is a need for such areas (45), and given that we are obliged to make decisions with imperfect knowledge, the land designated for withdrawal is presumed to have its optimal use in management for recreational, aesthetic and ecological values. Thus when areas are being considered for withdrawal, the Department of Mines should be given some time to make an assessment of their mineral potential. Qualified geologists should assess the geology of the area and relate it to any known mineral occurrences in surrounding areas. Use might also be made of geophysical and geochemical techniques that do not cause any disturbance of surface resources, but one cannot allow any more detailed examination than this because the wilderness characteristics of the land would then be lost. Even if the probability of finding economic mineral deposits is

relatively high, the decision with respect to withdrawal must also be based on the availability of alternative sites for withdrawal and their mineral potential. The consideration of individual situations in isolation and without reference to an overall plan for land-use allocation may in the final analysis, produce a result which is socially unacceptable. For example, if an area contained an ecosystem which was the only one of its kind in British Columbia, then its value would be increased relative to an unproven mineral value.

It should be noted that parks should not be created merely to control industrial activity. One of the main dangers of the park philosophy, which appeared during the controversy about mining in Strathcona Park, is that "inherent in the concept that there are many things forbidden in a park, is tacit admission that they are not forbidden elsewhere" (62). As the British Columbia Wildlife Federation has said:

"We do not believe that the establishment of parks to prevent other resource activity is the answer. A park should be set up for positive reasons - not as an admission that we cannot safeguard aesthetic, environmental and recreational values." (39).

## CHAPTER 5

### GOVERNMENT REGULATION

#### 5.1 Licences to cut timber

The requirement of the Forest Act that free miners must apply for a "Licence to cut" has met with considerable opposition (33). There have been many examples of excessive delays in issuing "Licences to cut" (36), one company reporting that it had to wait four months whereas a stumpage bill appeared well within a month of the timber being cut. Time is of vital importance to the free miner because of the short exploration season. Assessment work must be carried out during that time, and option agreements almost always include time clauses requiring additional work commitments and/or option payments (33). Because mineral exploration is carried out in stages, with each step dependent upon the previous one, programmes cannot be planned in detail several months in advance. Thus, many miners have been forced to proceed with their exploration programmes without a "Licence to cut" (36).

There is also a general resentment by the mining industry of control by the Forest Service, and the British Columbia and Yukon Chamber

of Mines "feels the need for a single government agency to deal with prospecting and exploration matters, namely the Department of Mines" (33). Apart from the general apprehension of losing his rights under the Mineral Act, the free miner regards the "Licence to cut" as implying an interest in the logging industry, of which he wants no part. It is recognized that the Forest Service is entitled to know of all operations which may affect the forest resource, but the mining industry considers that a copy of the "Notice of opening" should be sufficient (36). Certainly, if there is to be no charge for timber cut during mineral exploration (see section 3.4), the "Notice of opening" should suffice under present conditions provided that it gives sufficient information about the location, nature and extent of the operation and that the Forest Ranger has sufficient time to ensure that the impact of the operation will not be significant. This point leads on to the matter of land-use regulation in general.

## 5.2 Land-use regulation

Undoubtedly, there will be occasions when mineral exploration programmes will have an undesirable and significant impact upon some other resource management activity. These other resource users have every right to protect their resource base, and there must be some mechanism whereby any undesirable effects may be minimized or eliminated. One approach is to issue land-use permits.

The free miner would plan his exploration programme and then submit

a permit application outlining, in very general terms, what the exploration activity would involve with respect to surface resources. Copies of the application would be sent to local officials of other government departments, which would then be given the opportunity to make any recommendations about special requirements to be appended to the permit. Evidence should be submitted along with the application to show that any surface owners or occupants had been consulted. This would ensure that the landholder would have the opportunity to make representations to the reviewing body. In order that exploration work would not be delayed unduly, permit application would have to be considered within a maximum period of thirty days. Otherwise, the free miner would be permitted to proceed with his exploration programme on the assumption that his application had been approved.

From a total resource viewpoint, this approach to protecting the interests of surface owners or occupants is probably more satisfactory than that provided under the Yukon Minerals Bill (42) which is now under consideration. Under such legislation, the miner would not be permitted to enter upon granted or leased land without the consent of the landholder. If the miner were not satisfied with any conditions set by the landholder, the Mining Recorder would attempt to reconcile the two parties. If he were unable to do so within thirty days, he would notify the Supervising Mining Recorder, who, if also unsuccessful, would notify the two parties to proceed to arbitration. This approach



is unnecessarily complicated and might result in excessive delays from the mining point of view. Even if the landholder has no right to refuse entry to a free miner in British Columbia, his interests could be given adequate consideration when land-use permit applications were being reviewed.

The point of such a permit system is not to restrict the activities of the mining industry per se, but to prevent any conflict of interests before any damage is done. It would ensure that the free miner was aware of all relevant statutes and regulations and that the concept of multiple-use was given a fair hearing. Exploration plans need not account for every shovelful of earth which would be disturbed or every tree that would be felled, but should indicate the type of work - road building, trenching, drilling, blasting, etc. - and the location of these operations so that other resource interests would be able to assess the potential impact and recommend safeguards, such as slash disposal, or require ameliorative treatments such as the backfilling and reseedling of damaged rangeland.

As mentioned in section 2.3, there is a large number of "grass-roots" prospectors operating throughout the Province. In the main, the activities of these prospectors does not have a significant impact upon natural resources, and in addition to the astronomical increase in red-tape and paper-work, there would probably be no great advantage in applying a land-use permit system to their operations. The land-use regulations for the Yukon and Northwest Territories which

came into effect in November, 1971, (43), provide a useful example of how a land-use permit system can be restricted to those operations which are likely to have a significant impact upon surface resources. In these regulations, a "land-use operation" is defined as

"any work or activity on territorial lands that involves one or more of the following:

- (a) the use of more than 50 pounds of explosives in any one day or more than 300 pounds of explosives in any 30 day period;
- (b) The use, except on a public road or trail, of any vehicle that exceeds 20,000 pounds net vehicle weight or the use of any vehicle of any weight that exerts pressures on the ground in excess of 5 pounds per square inch;
- (c) the use of any self-propelled, power-driven machine for moving earth or clearing land;
- (d) the use of any stationery power driven machine for hydraulic prospecting, moving earth or clearing land;
- (e) the use of any power driven machinery for earth drilling purposes, the operating weight of which exceeds 5,000 pounds, excluding the weight of drill rods or stems, bits, pumps and other ancillary equipment;
- (f) the establishment of any campsite that is to be used in excess of 300 man-days;
- (g) the levelling, grading, clearing or cutting of any line, trail or right-of-way exceeding five feet in width."

Thus, the early stages of mineral exploration may be effectively excluded from the requirement to obtain a land-use permit.

When considering who should be responsible for reviewing permit

applications, it may be possible to satisfy the mining industry's desire to deal with only one government department. It should be acceptable for permit applications to be submitted to the District Inspector of Mines as is currently done with the "Notice of opening." The mining inspectorate is reputedly understaffed even with regard to its present commitments, but the introduction of a land-use permit system would require an increase in staffing whichever department was responsible.

Whether a land-use permit system is adopted or not, some consideration should be given to the co-ordination of local head offices and administrative boundaries in order to facilitate the co-operation of each government agency and to provide a centralized source of information for both government and industry.

This section, and indeed the whole study, has been developed on the basis of the present system of mineral tenures, and discussion of current problems has assumed the need to provide solutions which can be superimposed upon that system. It should be noted, however, that there exist other forms of mineral tenure which may be capable of providing an answer to some of the problems encountered in natural resource planning and administration in British Columbia. These provide for the negotiation of mineral rights in the form of exploration concessions between the government and individual companies. The exploration concession typically covers a large area which must be

explored over a limited period of time (49). At predetermined times, the concessionaire is required to surrender part of the original area so that his search becomes concentrated as time goes on. When applications are being made for such concessions, the applicant must demonstrate that he has both the technical and financial resources to carry out an exploration programme which is satisfactory to the government. Because each concession is negotiated separately, the government has the opportunity to attach any "reasonable" conditions to the agreement and can do so with a much greater degree of flexibility than is possible with mineral claim staking, which by its very nature, requires a strict legal code. The trend towards larger mining companies and the development of highly specialized exploration companies may facilitate the introduction of concessions as a form of mineral tenure in British Columbia sometime in the future, but with the large number of individual prospectors still operating in the Province, any attempt to do so would be bitterly opposed - hence the assumption that any proposed solution to current problems must be based upon the status quo.

### 5.3 Government structure

The problem of single resource orientation in both the legislation and government structure has been pointed out by Jeffrey (57) and Pearse (66). "It inhibits development of inter-disciplinary

functionally-oriented resource management teams" which are necessary for integrated resource management (57), and may lead to open conflict in legislation, such as the contradiction of provisions in the Forest Act and Mineral Act discussed in Section 3.4.

The present division of authority prevents a comprehensive approach towards resource management because each agency is concerned with its political influence relative to other agencies (47), each jealously guarding its own position. For example, the Deputy Minister of Mines has said that

"the principal responsibility of the Department of Mines and Petroleum Resources is to regulate the mineral industry in a manner, the results of which will serve the best interests of all the citizens of the Province. Within this purview, our obligation is to protect the industry from unwarranted invasion upon its ability to operate successfully in the public interest. It is in the interpretation of this area of responsibility that conflicting opinions sometimes arise as between industry and industry, and, in the context of the public service, as between levels of government and between departments of government." (6)

To achieve some measure of overall co-ordination, a Land Use Committee was established under the authority of the Land Act in 1969 to represent the resource use departments of the Provincial government (75). Now the Environment and Land Use Committee, operating under the Act of that name (22), it includes the Ministers of the Departments of Agriculture, Health, Mines and Petroleum Resources, Municipal Affairs and Recreation and Conservation, with the Minister

of Lands, Forests and Water Resources as chairman (41). There also exist various technical subcommittees whose members are drawn from lower levels of government and from outside of the government (41). "Essentially, this was the strongest single policy-making group in the Provincial government structure, and basically, its existence required and ensured that no unilateral decisions should be made by any individual department represented on the committee where such a decision affected the affairs of any other of the member departments" (75).

At one time, the idea of establishing a Department of Environmental Affairs was considered, but Williston, the Minister of Lands, Forests and Water Resources, has said that

"this was discarded in favour of the committee approach we now have in the belief that a committee structure enables involvement with the total administration of any single resource, or all resources, at all times allowing effective and constantly improving management in harmony with environmental requirements. At all costs, we decided that the wise course was to avoid the creation of yet another departmental structure which would provide yet another avenue for unilateral decisions concerning the solution of environmental problems." (75)

Williston's comments in the above paragraph were directed towards the environment, but the committee approach is also advisable for land-use and resource matters in general. Super-departments have been advocated for some time in North America, and "Mister Z" put forward the case for a federal department of natural resources in

the U.S.A. (76). Because Jeffrey (57) expressed some doubts about the long-term adequacy of the committee approach, some discussion of British Columbia's Environment and Land Use Committee is relevant.

Mister Z's main objection to committees and the use of consensus in the U.S.A. was that they result in divided responsibility and failure to face up to the need to center authority:

"Lacking any central authority short of the President, the member Bureau and Department representatives on these permissive committees are unable to resolve basic conflicts of interest. Line-operating authority disputes cannot be reconciled by discussion .. This proposition holds even when the co-ordinating committee is composed of cabinet level officials. Even here, integration requires presidential directives for each and every issue which arises .. At present, only if the President himself operates as his own Secretary of Natural Resources (to the near exclusion of many other important matters) can the problem of divided authority be resolved." (76)

Objections on the grounds that the ultimate authority in a committee system is, of necessity, pre-occupied with other matters are, perhaps, not as relevant in British Columbia. The Premier of the Province need not concern himself with matters of defence or foreign policy, for example. On the other hand, natural resources are of major concern in British Columbia.

It should also be noted that the amalgamation of all resource departments into one super-department would merely internalize the sources of conflict and remove them from the public eye. Although there would be some rationalization of agencies managing the same resource,

and indeed, this would be a significant improvement over the present situation in the U.S.A., Mister Z's super-department is still organized into resource-oriented bureaux, each of which would continue to be involved in jurisdictional disputes and in struggles to improve or maintain their political influence relative to the other bureaux (47). Apart from that rationalization, the only significant change suggested in Mister Z's proposals was that the ultimate authority would be placed in the hands of a Secretary of Natural Resources rather than in those of the President. The equivalent move in British Columbia would be to have only one cabinet minister in charge of all natural resources with the result that inter-resource disputes would not appear within the cabinet, whose members are directly responsible to the people rather than to their own particular bureaux (47), and, with the public's growing concern for information about natural resource policy and administration (5), this factor is of major importance. There would also be an undesirable concentration of government power and responsibility in one Ministry, possibly to the detriment of other government functions. Thus, the committee approach to the co-ordination of resource management would appear to be most appropriate for British Columbia at present.



## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

As was pointed out in Chapter 1, mineral exploration cannot be incorporated into the integrated resource management approach which involves "the application of management strategies to achieve the maximum output from the optimized use of natural resources of a specific area for the benefit of a referent-group and its successors" (57). However, because mineral exploration can co-exist with a number of other resource uses, it may be superimposed upon an integrated resource management system. What is necessary is that the rights and responsibilities of all individuals be clearly defined on the basis of sound land-use principles and that there is a free flow of up-to-date information about all operations in any area. In this respect, the government should direct itself to the following problems, which were discussed in Chapters 3, 4, and 5:

- (a) notification of exploration activity - Because of the lack of up-to-date information about mineral claims, consideration should be given to requiring that the free miner consult with the owner and/or occupant of the land surface before commencing, and preferably before detailed planning of any exploration work. Many potential sources of conflict can be resolved by consultation.

- (b) government regulation - To ensure that the concept of multiple-use is considered whenever decisions regarding one resource affect other resource interests, consideration should be given to the development of a system of land-use permits. The desirability of co-ordinating local government offices and administrative boundaries should be investigated.
- (c) assessment of timber values - The policy of charging free miners for timber which cannot or will not be used should be reappraised. The allocation of any charges among the various sectors of the mining industry should also be given careful consideration.
- (d) security against damages - Because surface occupants may have made considerable investments in the land they hold under lease or licence, consideration should be given to permitting surface occupants to request security against damages caused by mineral exploration. Consideration should also be given to developing some method of ensuring that adequate levels of security will be determined.

The government should devise a system of surveillance and communication and feedback mechanisms to prevent or resolve any potential or actual conflicts which may occur. As Smith (71) has said, it is to the political and legal aspects of integrated resource management that the greatest amount of research must be directed.

Both industry and government have already taken steps to improve communications and reduce tensions. Between April 1970 and January 1971, five meetings were organized by the Chief Inspector of Mines to discuss problems of the mining industry on the use of timber and forest lands (41). This committee included members representing mining and forestry from both government and industry. The meetings did not reach agreement on all issues, but did result in a greater understanding of each other's problems, and it was felt that these

meetings would result in fewer problems arising in future.(41).

The Council of Forest Industries and the Chamber of Mines now co-operate quite well on any problems which arise and have resolved several problem situations before they had a chance to become serious (65).

The Interior Resource Users Association, which includes the mining, forest and grazing industries, was originally formed to counteract the recreation and preservation lobbies, but now provides a very useful avenue for communication (61). This is very important because attempts must be made to reach solutions as quickly as possible before attitudes become hardened.

Not only must all resource users be aware of each other's problems, but the mining industry must be brought into discussions on resource policy and planning. The following statement refers only to geologists, but it is equally applicable to others involved in mining:

"The success of the conservation movement in the future will depend upon how effectively the various segments of the movement can be pulled together into a comprehensive natural-resource ethic. Although some of the most famous of early conservationists were geologists -- men like John Wesley Powell, John Muir, C.R. Van Hise, and C.K. Leith -- geologists are conspicuous by their absence from today's natural-resource planning groups .. which seem to be controlled largely by representatives of forest and range, recreation, water and wildlife interests .. Perhaps geologists are regarded in government circles as champions of the mineral industry rather than as conservationists. They are both and should behave as such; the two are not mutually exclusive. The counsel of geologists is essential in the development of a comprehensive natural-resource ethic." (51)

It is only through a mutual awareness of each other's problems and objectives that common ground can be found to settle operational problems and yet achieve the objectives which, in the long-term, will benefit the people of British Columbia.

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## APPENDIX



Please complete and forward  
one copy to the District Inspec-  
tor of Mines and one copy to  
District Forest Ranger.

DEPARTMENT OF MINES AND PETROLEUM RESOURCES

## Notice of Opening of a Mine or Quarry, or of Work on a Mineral Property

(Pursuant to Section 10, Mines Regulation Act)

1. Name of property.....
2. Location of property.....
3. Owner's name and address.....  
.....  
.....
4. Operator's name and address.....  
.....  
.....
5. Estimated duration of specified exploration or mine development programme:  
From....., 19....., to....., 19.....
6. Approximate number of men to be employed.....
7. Give approximate details of any of the following work you propose to do:
  - (a) Road construction (distance and width of clearing\*).....
  - (b) Line-cutting (distance, width, and method).....
  - (c) Total area of clearing other than above.....
  - (d) Total area of:  
Trenching (square feet).....  
Surface stripping (square feet).....  
Test-pitting (square feet).....
- \* Include sketch of location where necessary.
8. Date Forest Service advised by operator.....  
.....
9. When work ceases on a mining property, the owner, agent, or manager shall, within one week of cessation, give notice to the District Inspector of Mines (section 10, *Mines Regulation Act*).

Signature.....

Name (print) .....

Position .....

Date.....

May, 1970

## **NOTICE TO ALL FREE MINERS AND ALL PERSONS ENGAGED IN MINING EXPLORATION**

### ***Forest Damage Abatement***

The Department of Forests has become seriously alarmed at the amount of unnecessary damage and waste of forest growth arising out of indiscrimination in the performance of mining exploration work. Included in its summary of areas where damage and waste are taking place are:—

- (1) Access roads.
- (2) Bulldozed geophysical grid lines.
- (3) Drilling-sites.
- (4) Trenching.
- (5) Mine-camp locations.

The main items of concern are: (1) Slash is not disposed of, leaving very severe hazards from both fire and disease; (2) in many cases access roads are not properly located and much waste takes place where the bulldozer operator makes several attempts to get through; (3) timber is destroyed because little or no care is taken to avoid waste.

Today's concept of forest growth and production is based on a perpetual-yield basis, and every effort must therefore be taken to minimize waste of standing timber as well as the destruction of surface capable of perpetual yield. It need not be construed that legitimate mining exploration work will be unnecessarily hampered by the need for sensible conservation of forest growth, but it is essential for all those in the mining exploration field to recognize that failure to co-operate in carrying out the requirements detailed herein will result in stringent official regulations to the probable detriment of the mining fraternity.

Section 10 of the *Mines Regulation Act* requires that whenever persons are employed in the opening-up, development, or proving of any mineral deposit, the appropriate District Inspector of Mines shall be notified. The reverse side of this notice is for that purpose.

The object is to establish where and what work is proposed so that the Inspector of Mines and the District Forester, in co-operation, can limit damage and waste.

Section 10 referred to above will be enforced to the point of penalties being imposed for its non-observance.

Section 115 of the *Forest Act* is quoted below for the benefit of those who may not be aware of the authority of the Forest Service to exercise control:—

115. (1) Where as the result of the carrying-on of any operation for the cutting or removal of trees or timber any slash, including in that expression any brush or debris, is occasioned or accumulated, the person carrying on the operation shall, on the demand of any officer authorized by the Minister, dispose of the slash by burning or otherwise to the satisfaction of the Minister.

(2) Where any person fails or neglects to dispose of any slash at the time and in the manner required under this section, the Minister may dispose of the slash, in which case all expenses incurred therein are forthwith due and payable to the Crown from that person.

The form of notice of exploration work to be done (*see reverse side*) should be completed in triplicate and one copy forwarded to the Inspector of Mines for the district in which the property lies and one to the District Ranger.

**Free miners have rights and privileges! Free miners also have responsibilities and liabilities!**

**The accepted principles of multiple resource use require that free miners respect the rights of other natural-resource users—loggers, cattlemen, recreationists, water-users, and many others.**

**NOTE.—The District Inspector and District Ranger should be notified every time work starts after any shutdown in addition to the original notification.**