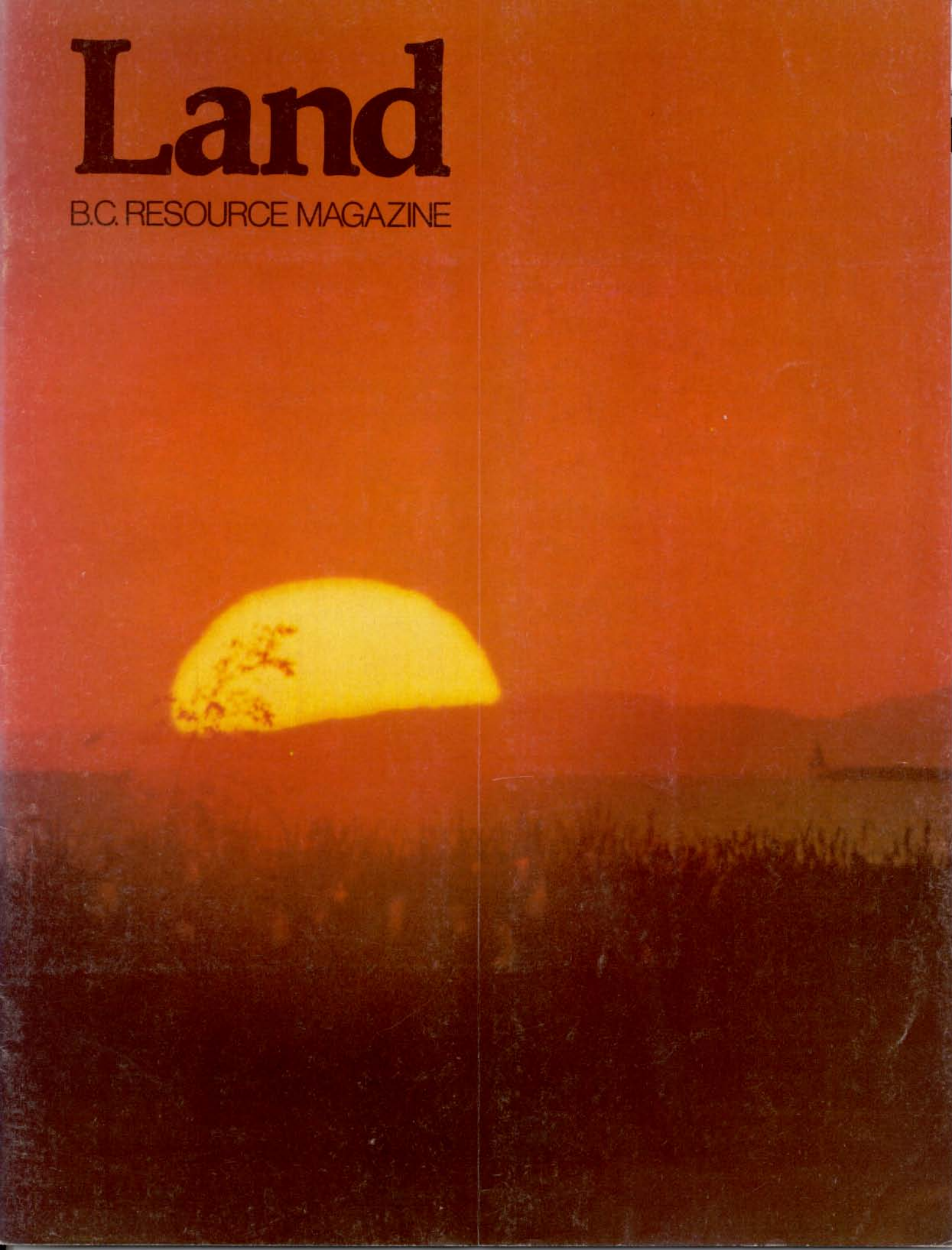
Land

B.C. RESOURCE MAGAZINE



LAND is a new and exciting magazine devoted entirely to reporting all aspects of resource management in British Columbia. LAND also represents a highly economical (a few cents per reader) and attractive means of communicating this information to you. In this and ensuing issues, we will present the problems of resource management and the philosophies of those involved and affected by resource decisions. You will be able to keep up-to-date and well informed by reading LAND. Future issues will include articles on water resources and the problems of pollution control; how petroleum and mineral resources are managed; how recreation areas are determined and where they are; the principles of land management will be discussed; you will read about agriculture, forestry, wildlife, fish management and more. Resources are the basis of our quality of life in British Columbia, so take the time to read this first issue. If you like the idea of the magazine, its format and method of presentation, fill in the attached card and mail it today. You then will receive LAND four times a year, free.

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B.C. RESOURCE MAGAZINE

SEPTEMBER, 1975 **Volume 1, Number 1.**

Cover photo taken near Vancouver by Don Pierce, clearly illustrates the prominence of the sun from a visual aspect. But we sometimes fail to see the sun in its real role of supplying us with a limited amount of natural resources, vital to our survival. Close attention to our impact on natural resources will assure us of our future, but we are at a point in history where this decision must be made.

LAND is a quarterly publication of the British Columbia Environment and Land Use Committee and is mailed free of charge to interested groups and individuals. Its objective is to increase and disperse knowledge concerning the formulation and application of the principles of natural resource management in British Columbia. Articles and photographs are contributed by the provincial departments of: Lands, Forests and Water Resources; Agriculture; Recreation and Conservation; Mines and Petroleum Resources.

Gerry Graham
Editor

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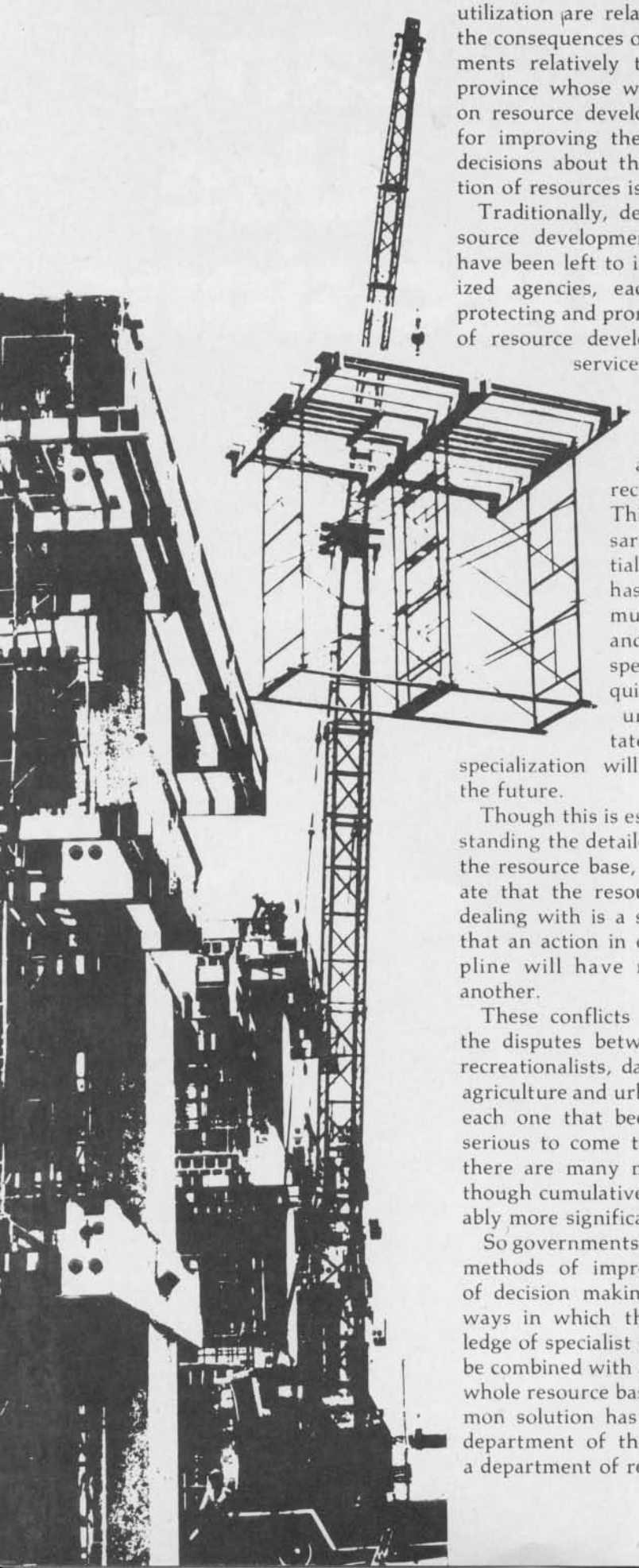
Land Use Decisions

by **Alistair Crerar**

In the past, in British Columbia, the land and its products were so vast and bountiful, the people and their requirements so few and modest, that it was possible to accommodate most demands with a minimum of conflict or discrimination. Today, there are more people, both here and abroad who need the products of the land. At the same time qualities of space, the natural environment and the wilderness experience are being sought by increasing numbers, just when these qualities are more and more difficult to find.



When a product is in surplus and demand is low, decisions about its utilization are relatively simple and the consequences of mistaken judgements relatively trivial. But, in a province whose well-being is based on resource development, the need for improving the ability to make decisions about the use and allocation of resources is imperative.

Traditionally, decisions about resource development and land use have been left to individual, specialized agencies, each charged with protecting and promoting one aspect of resource development; a forest service for forestry, an agriculture department for agriculture, a parks service for recreation and so on. This has been necessary, indeed essential. Each discipline has accumulated so much information and expertise that specialization is required. Increasing understanding dictates that even more specialization will be required in the future.

Though this is essential for understanding the detailed mechanisms of the resource base, we must appreciate that the resource base we are dealing with is a seamless web and that an action in one area or discipline will have repercussions in another.

These conflicts have surfaced in the disputes between forestry and recreationalists, dams and fisheries, agriculture and urban expansion. For each one that becomes sufficiently serious to come to public attention there are many more that do not, though cumulatively these are probably more significant.

So governments have been seeking methods of improving the quality of decision making, to provide for ways in which the detailed knowledge of specialist departments could be combined with a total view of the whole resource base. The most common solution has been to create a department of the environment or a department of resources.

British Columbia however has tried a different approach by maintaining the individual specialist departments and bringing together the Ministers responsible for the individual departments in a committee of cabinet known as the Environment and Land Use Committee. One of the advantages of this approach is the ability to include other non-resource departments whose actions nonetheless are strongly affected by, or strongly affect, the resource departments. The Environment and Land Use Committee consists of the Ministers of Agriculture; Lands, Forests and Water Resources; Mining and Petroleum Resources and Recreation and Conservation (the resource departments) and the Ministers of Economic Development; Health; Highways; Municipal Affairs and Northern Affairs (departments whose activities affect the resource base).

Initially, the Committee was assisted by a Secretary/Co-ordinator who worked through a Technical Committee consisting of the Deputy Ministers of the same departments to provide staff support for the Minister's Committee. This was a cumbersome device. As an alternative, the Ministers' Committee decided to establish a Secretariat which could act as a full time continuing staff arm to the Committee.

The Secretariat was initially organized in two divisions — Resource Planning and Special Projects — each with a small, five/six person, multi-disciplinary professional staff. These two units have the same aims and objectives; to examine problems and potentials in the resource development field, to identify alternatives and to assess the direct and indirect consequences that are associated with each of the alternatives.

The Resource Planning Unit focuses on areas and regions in its approach to resource management, while Special Projects focuses more on kinds or classes of resource use conflicts, such as power projects or developments in estuaries.

It is essential for each resource department to continue developing its capability, to consider the resource for which it is responsible,

People need land on which to build homes, schools, offices and factories. But there are other needs of equal importance, and these require careful planning and farsighted decisions.

to prepare plans for its development, utilization or preservation.

As a rule, most matters can be settled satisfactorily by departments dealing directly with each other; Fish and Wildlife with Forestry, Agriculture with Water Resources, etc. It is only in those cases where problems cannot be handled simply and directly, where frustration levels are too high, where areas are too complex, or too many departmental interests are affected, that the Secretariat becomes involved, and then only on the instructions of the Environment and Land Use Committee. This ensures that the Ministers collectively have identified that the problem, or the necessary investigation, is beyond the scope or capability of a single department.

The usual operational method is to bring together a working group or task force consisting of representatives of all the involved departments to see if a mutually agreed solution can be achieved. In this case, a member of the Secretariat acts as the neutral chairman-secretary-catalyst of the group. He/She will look for the common thread of interest that will serve to unite all members of the task group, to isolate the conflict areas and define as clearly as possible the basis of the conflict. Sometimes this process is, in itself, sufficient to identify acceptable solutions. If it is not and major problems remain unresolved, the matter is brought back to the Environment and Land Use Committee, with the positions of each side identified and possible alternatives sketched for the final decision of the Ministerial Committee.

The results of this process are not the production of comprehensive master plans to be unveiled with a flourish of trumpets. It is an incremental process that gradually reduces and resolves areas of conflict between a sounder approach to resource use and development, and ensures that sector by sector, the quality of decisions improves.

This process has only been undertaken at the headquarters level in Victoria. The secretariat has no field staff or representation at the regional level. During 1975 an experiment in having representation in the field will be undertaken. Conflicts that arise in the regions are best solved in the regions. At present, Inter-Sector groups, consisting of senior regional departmental representatives, meet occasionally and informally to try to resolve problems and difficulties as they arise. In some instances they have been extremely successful. The key to success has

To arrive at the right answers, we must ask the right questions.

been the dedication of a senior official to a multidisciplinary approach to resource development problems. By providing a regional resource co-ordinator, who would report to the Secretariat and thus not be identified with a single resource discipline or department, it is hoped that the kind of success that has been achieved at the headquarters level can be duplicated at the regional level. Again, it will only be successful if the regional co-ordinator appreciates that he is not superior to other Departmental representatives, but the servant of all of them, dedicated to solutions that will be most beneficial and least detrimental to all. Similarly, it will be essential that the departmental representatives in the regions recognize that analysis and consensus and ministerial approval are the means of conflict resolution.

In January 1974, a third unit was added to the Secretariat. This was the 94-person-strong British Columbia Land Inventory Unit (BCLI), formerly attached to the Department of Agriculture. Formed in 1964, it has been conducting land inventories in British Columbia for the past 10 years as part of a nationwide program called the Canada Land Inventory. On joining the Secretariat, the BCLI was designated as the Resource Analysis Unit. Inventories are a normal function of every resource department; however, the usual type of inventory that they undertake is related to standing stocks or their use. The Forest Service, for example, has a continuous inventory of the number, age, volume, and species of trees and their utilization or removal by fire, decay, or disease. Fish and Wildlife have counts of game animals and their increases or decreases in numbers in specific areas. These kinds of inventory are obviously essential for sound management and administration of these particular resources.

The BCLI on the other hand is an assessment of the capability of the land to support a particular use. Capability is based on the inherent quality of the land (or water) to support resources and is a function of geology, soils, climate and native plant cover. Much of the settled part of British Columbia has been classified by its capability for agriculture, forestry, wildlife (ungulates and waterfowl) and recreation on a national classification system which is comparable across Canada. This is essential background information for long-range planning, the ability of the land to support various uses.

There are still major gaps and deficiencies in the BCLI information. It covers principally the presently settled and utilized part of the Province, not the areas that are undeveloped.

During 1974, the inventory was extended into undeveloped sections of the Province, with priority to the northwest section.

During the past year, a new approach to land capability, based on its biophysical capability, has been undertaken. This approach returns to the inherent capabilities of the land (geology, soil, climate, native plant cover) and identifies the limitations placed on each possible use by physical parameters. As such, the inventory data can become a more useful tool for land management by identifying the critical limitations associated with a particular area, providing a guide to the management practices that should be adopted in each area and in indicating how a number of uses might be accommodated in a single area, without harm to the base that supports them all, the land.

The Resource Analysis Unit provides a competent, neutral source of information on land capability. In a number of instances, it can provide, by itself, the appropriate answer to what the future use of a parcel or area of land should be. However, it provides only partial answers when the capability is high for a number of uses, with no one use clearly dominant. An aid in making these difficult decisions would be information on the net economic returns possible from each alternative use or their combinations. Work has begun on quantifying the socio-economic aspects of land-use decisions and certainly this type of information will be essential to improving the quality of decisions about future use of land in the Province. □

Okanagan Valley

A question of water.

by **Frank Appelbe**

The Okanagan Valley is uniquely beautiful. Through much of its length, grey-green sagebrush carpets the lower slopes of the brown hills which, dotted with scattered pine and fir trees, contrast colorfully with the rich green of orchards surrounding the lakes and sprawling over the high benchlands. From arid volcanic soil, irrigation has created a verdant valley, a pleasant place to live and a popular vacationland.

It is unique, too, because its southern end is a desert and much of the long valley is semi-desert. From where the International Boundary cuts across Osoyoos Lake north to around Vernon, the average rainfall is approximately 10 inches (compared with 7" at Phoenix, Arizona) and searing summer temperatures of 40°C or more are common. Oliver has recorded 111°F.

The Okanagan Valley Basin which comprises the valley and the surrounding mountains has an area of 3165 square miles in Canada, with a single drainage system flowing south into the United States.

The dominant feature of the 113-mile long basin is Okanagan Lake. Narrow, not much over two miles average width, and about 60 miles long, it has an area of 86,000 acres (135 square miles).

In the valley bottom, precipitation increases from the south to north with Oliver having an annual average of only 10.7 inches compared wtih 17 inches for Armstrong. In the high plateau region near Kelowna, the average as measured at McCulloch is 27 inches. Overall, the annual mean precipitation for the Okanagan Basin is some 22 inches.

Irrigation has made the valley a major producer of fruit in Canada

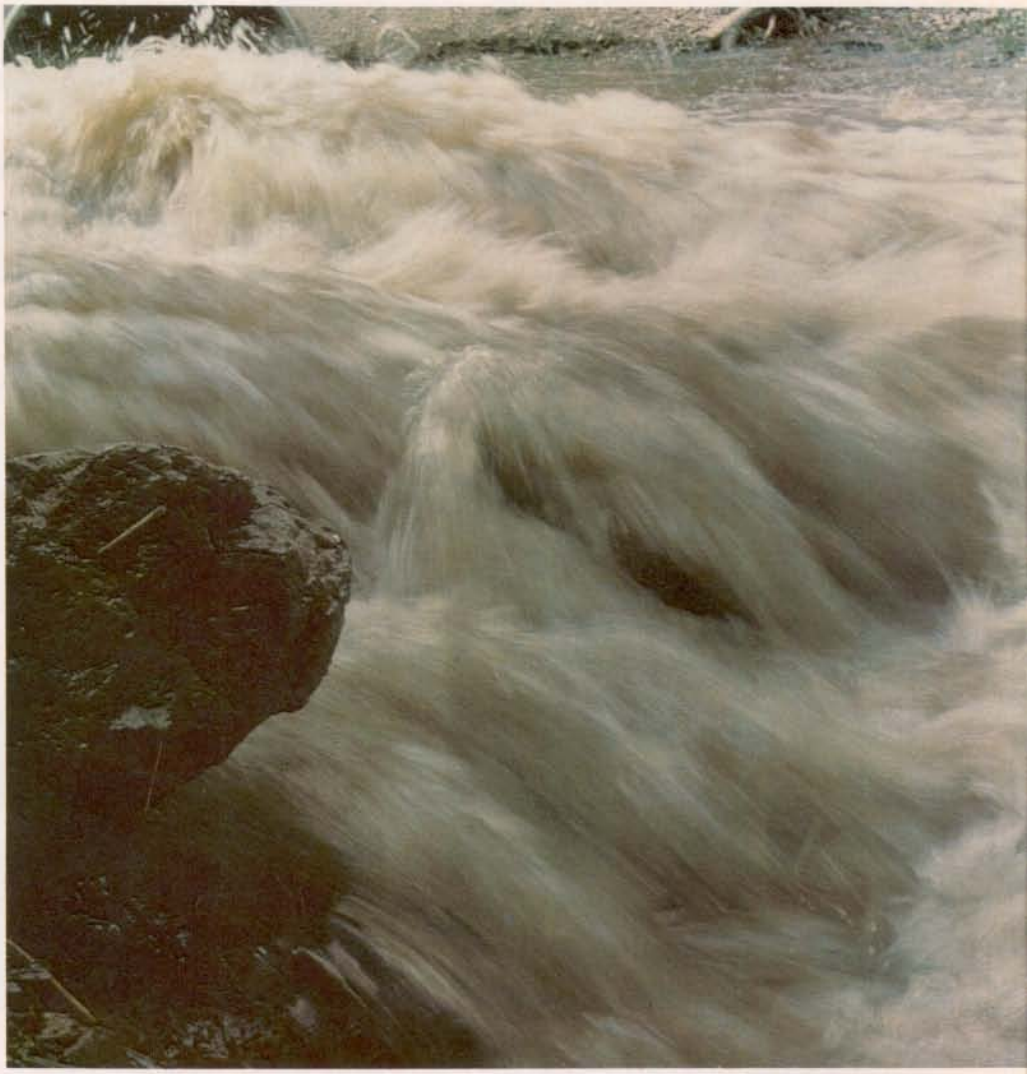
Constant monitoring of snow conditions in the higher altitudes helps to anticipate spring runoff and the effects it will have on the valley.

and an important source of vegetables and dairy products. About 50% of the 60,000 acres of irrigated land is in orchards and in recent years hundreds of acres have been turned over to growing grapes for the local wine industry.

The Okanagan Valley has a resident population of close to 125,000. Its half a dozen larger lakes and miles of wide sandy beaches lined with shade trees attract vacationers from all over the world making the valley one of the major tourist centres in B.C.

In winter, the high mountains with their excellent snow conditions draw skiers. At the peak of the winter, visitor accommodation in Vernon can be as scarce as in the middle of August.

Considering the number of fresh, mountain streams feeding the valley, it would seem impossible that the water system could become polluted. But as far back as 20 years, some conservationists, biologists and water resource engineers were voicing concern about persistent weed growth in shallow areas of the lakes around the larger centres of population and about the development of algae blooms. All indicating ecological imbalance.



By this time there were other problems, not obvious to the average resident, but of concern to those involved in particular aspects of water application and use. Orchardists were becoming concerned about future supplies for irrigation. More water was being drawn from tributaries, which are the principal source of supply, for both agricultural and municipal use, leaving less for fish and for recreational purposes. Algae blooms, weed growth and low lake levels during drought periods created not only adverse aesthetic effects, but indicated a problem of supply.

There was the major problem of Okanagan Lake, the basin's largest reservoir. Replacement of water had varied widely over the years being dependent upon the snowpack on the mountains surrounding the basin combined with the low rainfall. In flood years, it is difficult to control the maximum level of this lake while in drought years the lake must be drawn down to meet consumptive use.

THE FIRST STEPS

By the second half of the 1960's, public concern was widespread. Action was demanded and the result was the signing in October, 1969, of the Canada-British Columbia Okanagan Basin Agreement. The federal and provincial governments agreed to jointly finance a four-year study, which would recommend a comprehensive water development and management plan. This plan would have as its principle, betterment of the quality of life for resi-

dents and industry in the valley.

The British Columbia Water Resources Service provided a co-ordinator to study water quantity, water quality and waste disposal, and shared responsibility with Environment Canada for socio-economic studies. Environment Canada handled limnology and fisheries. A non-government consultant was retained to work towards public involvement.

Further, consideration was to be given to the related matters of health, wildlife, forestry and the spectrum of land use. As one report points out: "Only through careful planning and integrated management of the basin's water, land and human resources can the economic and environmental harmony of the basin continue".

The report states that land use is of basic importance because, as examples, domestic animals kept beside streams could result in pollution, or logging operations might cause stream erosion and silting, or denude land essential to control of runoff water.

In November 1973, a draft summary report containing the finding and the recommendations of the study was released to the public. The full report also was made available for anyone who wished to examine the study in depth.

Since the original terms of reference emphasized public participation, suggestions were forwarded to the study committee by the public involvement co-ordinator and incorporated into the main report.

The four-year study investigated the following areas:

Water quality in the Okanagan Basin.

Water quantity alternatives and supporting water quantity data.

Water quality and waste loadings in the Okanagan Basin.

The limnology of the major Okanagan Basin lakes.

Value and demand for water in the Oakanagan Basin.

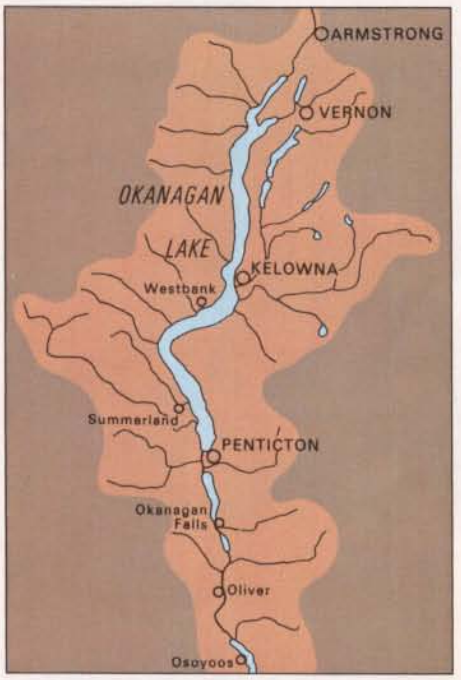
Review and evaluation of waste water treatment in the Okanagan Basin.

Water-based recreation in the Okanagan Basin.

Fish and wildlife in the Okanagan Basin.

Economic growth.

Public involvement.



Planning, administration and institutional considerations.

In response to a major recommendation of the report, an Okanagan Implementation Task Force was established in June 1974 to recommend to the federal, provincial and local governments and other concerned organizations, ways and means to implement a comprehensive plan.

THE FUTURE

The 50-year projection considers three possibilities for economic growth. One, that present economic policies will remain in effect resulting in a population of 391,000, employment of 105,000, irrigated acreage 59,600 and visitor total of 2,300,000 by the year 2020.

Projection of high economic growth by 2020, would be 430,000 residents with 118,000 employed, irrigated land would decline under pressure of municipal growth to 56,600 acres, and tourists would number 2,300,000 which is about the maximum recreational facilities could be developed to handle.

However, should the valley opt for reduced economic growth, the population would reach 290,000 with 76,000 employed, irrigated acreage would increase almost 25% to 73,700 acres and there would be 1,800,000 tourists. Public discussions following the release of the report indicate that the latter course is favored by today's residents.

It will cost $1,000,000 to make structural improvements to the mainstream system to meet the demands for water for all purposes, offset by economic benefits valued at $500,000 plus significant social and environmental values which cannot readily be stated in dollars.

Waste treatment, particularly

Winter sports have made the Okanagan a year-round tourist area. But ski developments and trails must take into consideration the effects they will have on the quality and quantity of water in the valley.

phosphorous removal by 1985, will cost $4,800,000 with direct benefits of $4,100,000 and other benefits estimated at $9,200,000.

Storage in tributaries to the lake system and a hatchery system for management of sport fishing will cost $1,140,000. Offsetting benefits are valued at $800,000.

The net results of the expenditures will be close to a balance between direct costs and benefits and a bonus in excess of costs in social and environmental benefits.

ACTION

The urgent first step is improved treatment of sewage. This will ensure removal of most pollutants especially phosphorous which is identified as the principal nutrient promoting undesirable plant growth in the lakes. Summary report specifies clearly the time schedule for changes and improvements to various municipal sewage systems.

The report also is specific about the need to control feedlots, septic tanks and industry which may pollute tributary streams.

Second is the adequate supply of water for all purposes. States the Report: "Under good management, there is enough water for all needs, including drought periods when the lake level is adjusted to within acceptable tolerances and additional headwater storage of streams is completed."

The summary report also recommends that the conflict between fisheries and irrigation be solved by a system of allocating water from some creeks for specific uses; that flood-plain zoning and protection measures be instituted where necessary to minimize potential flood damage; that the International Joint Commission study Osoyoos Lake with respect to minimum and maximum water levels; that sport fishing be upgraded by use of hatcheries and improved habitat; that beaches and other shoreline recreational activities be expanded and improved, and that everything done be monitored constantly with a full review by 1980.

Also called for is a review of forest management and agricultural practices by appropriate government departments and consideration of the establishment of green belts where necessary to reduce pollution and erosion. Sprays and fertilizers should be studied for their effects on the environment.

The important fact is the establishment of a master plan to avert what was shaping up rapidly as a major disaster threatening the quality of life in one of Canada's important agricultural, residential and recreational areas.

The plan, which slowly is becoming operative, is broad in scope and sufficiently flexible to meet changing needs and conditions. □

Commitment to the Future

by **Rod Cameron**

What do airports, agriculture, industrial development, salmon fingerlings, superports and 20,000 snow geese have in common? Why, the Fraser delta, of course. And with all these competing for the same space, there just have to be a few problems.

The wetlands of the Fraser delta, as any student of migratory birds can tell you, are probably the most valuable waterfowl migrating and wintering areas on the entire Pacific coast of North America. Two million ducks, five million shorebirds and thousands of other bird species migrate annually through the lower Fraser Valley, coming from as far away as Eastern Russia on their way to wintering grounds in Central and South America. In addition, about 250,000 ducks, 20,000 snow geese and over a million shorebirds remain to winter on the tidal marshes and agricultural lands of the valley.

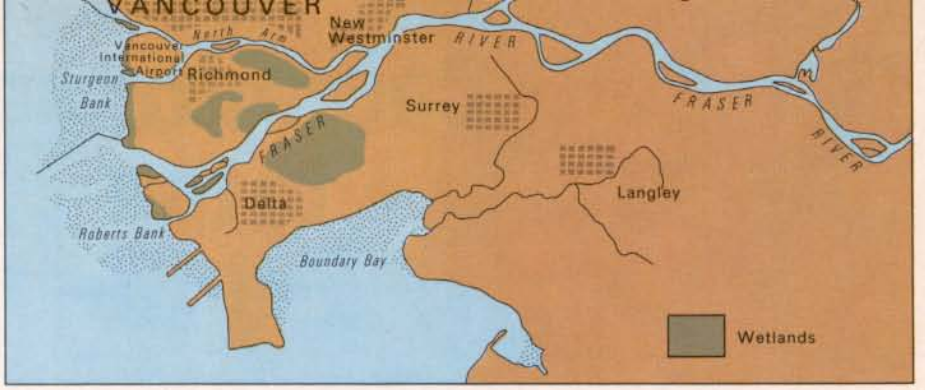
But what is more important than mere numbers is the location of this wildlife spectacular on the very doorstep of the largest population centre in the Province — the greater Vancouver area. This position not only allows easy access to wildlife based recreation usually far-removed from the urban environment but provides excellent opportunities for environmental education exactly where it is needed the most — the city. It is an oasis of wildland in the middle of dense population and extensive development.

The same location that makes these wetland areas so desirable for their natural qualities also means they are constantly threatened by rapidly expanding urban and industrial development. Vancouver's geographic location has provided it with very few options for expansion, and one of the most obvious has been the adjacent delta areas. The fertile delta soils first attracted attention for their agricultural potential but as the pressures for expansion increased urbanization and industry followed closely behind. Starting first with the most stable delta areas, this development gradually moved into the marshes with the help of dykes and land-fill operations. The result: of an estimated 45,000 acres of wetland marsh in the lower Fraser Valley at the turn of the century less than 8,000 acres remain. The most important of these marshes, with their associated tidal areas, are located at Roberts and Sturgeon Banks, Mud and Boundary Bays, the lowlands of the Serpentine and Nicomekl rivers and in a number of islands at the mouth of the Fraser River's south arm.

Estuaries are consistently the most biologically productive areas throughout the world, yet just as consistent has been the tendency to locate major cities and harbours adjacent to them. As the cities expand, the patterns of land and water use change; pollution increases, and the result is a steady deterioration of living systems that occupy these areas. In the case of the Fraser delta, however, there is one important difference. We still have the opportunity to identify and protect those areas most critical to the survival of these delicate natural systems and

. . . Waterfowl and wildland on the Fraser Delta

"Wetlands of the Fraser delta are probably the most valuable waterfowl migrating and wintering areas on the entire Pacific coast."



ensure their continued existence even with further development. We can learn from others who have allowed wetlands such as these to be drained, filled and developed with a resulting loss of the last remnants of wildland to those who probably need it the most — the city dwellers. We can make a commitment to the future.

There are some very strong arguments for doing this. The potential for wildlife education and recreational opportunities in such a setting have already been mentioned. But there are some much broader benefits to such a commitment that makes it an important one even to those people who will never set foot in these wildland areas.

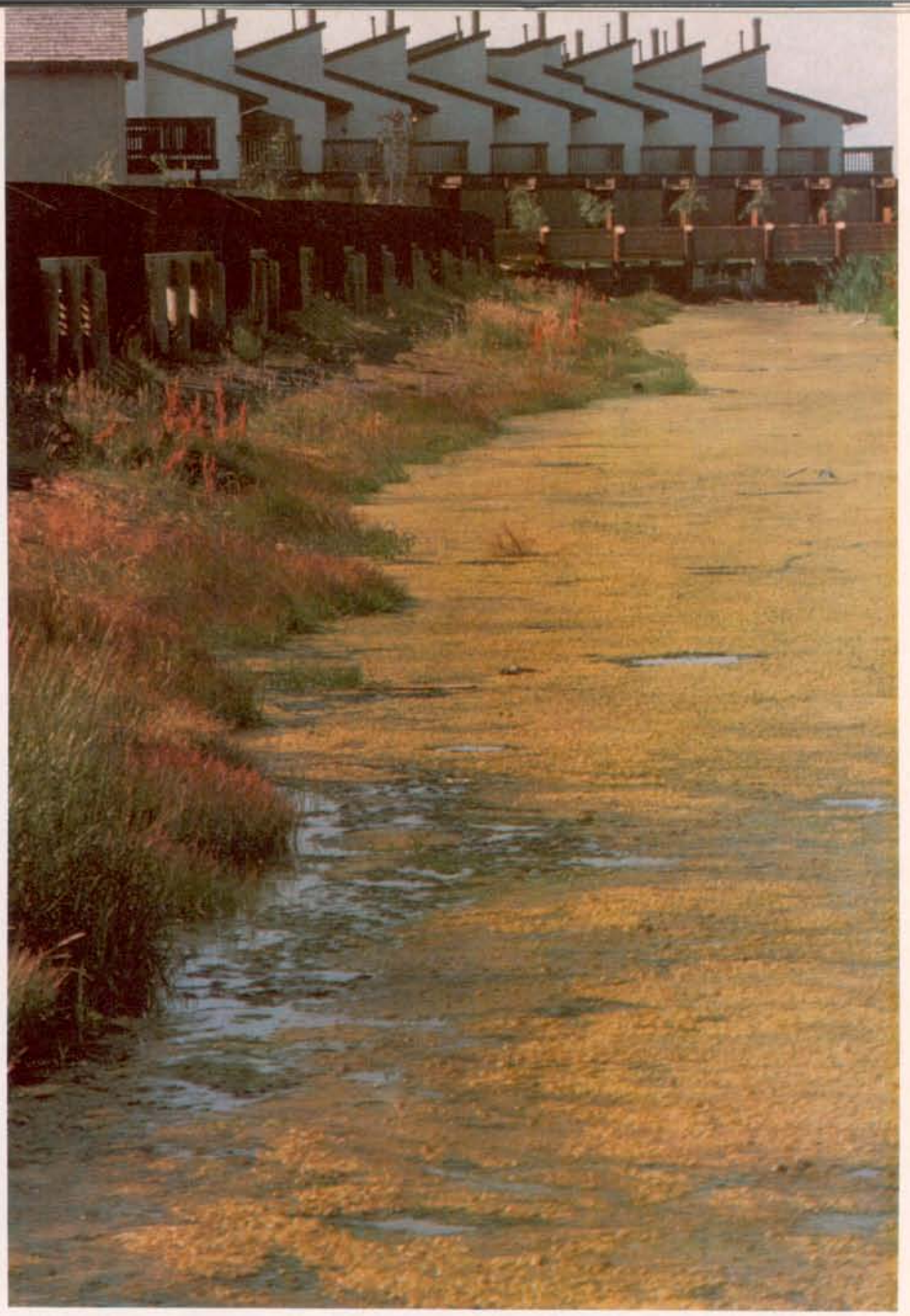
Agriculture is one of these. Properly conducted, agriculture is a complementary type of land use that is completely compatible with use by waterfowl. Both are threatened by other, incompatible, types of development and both may be secured by a commitment to preserve these key delta areas. The resultant agricultural "Green Belt" is important in terms of both perishable food supplies for the city and a general stabilization of the delta ecosystem; the security of wildlife in these areas is a fringe benefit.

The Fraser river fishery is also highly dependent upon these marshes. The nutrient rich waters of the estuary provide a nursery for fingerling salmon and sustain a wide variety of other fish and shell fish that not only provide important recreation of their own but also make significant contributions to the province's economy. The tidal flow and the silt-laden waters of the Fraser enrich and replenish these areas in a continuous cycle that is broken only by the draining and filling operations of the land developers. What's more, it's free. All of these benefits may be realized with nothing more than a recognition that the productivity of these areas depends upon their remaining intact in a natural condition.

With so much at stake, some fast action was demanded, and some major steps have been taken to secure these critical areas. An overall plan for the management and protection of key waterfowl habitat was devised by the Provincial Fish and Wildlife Branch and the Canadian Wildlife Service over two years ago. Much of the land identified in this plan has already been secured for wildlife management through a variety of means including actual purchase of key areas as they became available. But there is still a great deal to be done and as the expansion of various types of development continues to alienate more delta area, it makes the remaining natural areas all the more critical. One single development — the proposed Vancouver International Airport expansion — threatens to eliminate a further 1,500 acres of tidal marsh from an already depleted marsh area.

It is probably not realistic to expect some permanent solution to the question of land use in the Fraser wetlands. As long as there is urban and industrial expansion in the low-

Urban development can threaten the very existence of the wetlands.



er mainland, the pressure will exist to use these areas for such purposes. Their fate will ultimately depend on what values we assign to the different possibilities for their use in years to come. But future generations will undoubtedly place a high value on wild areas such as these, and it remains for us to at least provide them with the raw materials they will need. No future generation will be able to restore the delicate and productive qualities of these marsh areas if we have given it to them in the form of a landfill.

The major problem with this, as with many other wildland conservation issues, is the sheer inertia of development. As the pressure increases, the economic value of any available land soars and it is this that the supporters of wildland and wildlife must compete with. The difficulty is that traditional economic analysis has left little room for the inclusion of recreational, educational or aesthetic values in its formulas. Perhaps this is only appropriate — many people feel that to attach a dollar value to these qualities is to degrade them somehow. But as demand for a particular piece of land skyrockets it becomes more and more difficult to suggest that the best type of development is no development at all. And, in all honesty, it is difficult to expect the uninitiated to look upon a tidal marsh and see beyond the mud and weeds to the intricate and productive living systems that exist there.

But the river and its delta have their own way of fighting back and this may itself be the most convincing argument for a type of land use that recognizes natural values in these areas. It is, quite simply, that the delta belongs not to the land but to the river and to the sea. The river brought it there; the sea and the river can both take it away. The shaky tenure of the land is held only through the exhaustive and costly processes of dyking, pumping and filling and any development in these areas will always be subject to the moods of the river and of the tides. For if, as occupants of delta areas all over the world have learned, the river decides to rise up and flood over its delta, there is little force yet devised by man that can prevent it from doing so. The result in a highly developed delta area is always costly in terms of property damage and often in terms of human life. The solution: to avoid this type of development in the first place.

Man's developments are imposed upon the delta; those of nature have grown and developed with it. Unlike those of man, natural systems are well adapted to the various moods of the river and of the sea. They do not resist changes in the river and the delta but rather take advantage of these to produce new life. They are partners, not competitors.

It is this sort of reasoning that has led many people to believe these areas should be developed for their natural qualities rather than as an extension of the city. You may agree. If you do, you'll have one benefit that no other type of land user can offer; the support of 20,000 snow geese.□

Keeping The Options Open

by **Marnie Huckvale**

In recent decades, man has had to undergo a radical change in his concept of the world we inhabit. For centuries, we have been moving to open up frontiers, to conquer new territory, to build, develop, industrialize, and bring into production new lands. Now, with population increases, urban sprawl, food shortages, and depletion of existing resources, a seemingly infinite land and resource supply has, abruptly, become finite.

While vast land masses remain unpopulated, there is a shortage of land for the production of food to feed the world's increasing population. The protection and preservation of agricultural land has become a key issue in many areas of the world.

British Columbia's mountain ranges make the province one of the country's most beautiful, but they also contribute to making it one of the most difficult lands to bring into agricultural production. Where the land is fertile, and accessible, it is capable of producing excellent crops. But where the land recedes into the mountains, it becomes increasingly marginal for agricultural production.

As a result, economic enterprise in the province, whether it be urban development, agricultural production, industrial growth, forestry, or any other activity, must take place within a limited area. And agricultural land has been the first to feel the pinch. As Gary Runka, General Manager of the British Columbia Land Commission, put it succinctly, "All of our cities are a result of where somebody banked a canoe and pitched a tent. Unfortunately, these are also the best agricultural lands."

If a province is to grow, develop, and utilize its full potential, the land cannot remain untouched. Yet in a province of some 250,000,000 acres, British Columbia has just 11,000,000 acres of arable land, and something like 2,500,000 acres of *prime* agricultural land. If this is to be protected, it must, in some cases at least, be in co-ordination with and perhaps at the expense of other interests.

The need for an integrated land use management policy has been recognized not only in British Columbia, but across Canada, the United States, and throughout the world. After centuries of pushing back the frontiers, it is no longer open season on the land. The realization has come that the excitement of conquering the land must be traded for the realistic controls of long-term management.

British Columbia, because of its geography, has a more immediate problem than provinces with more potential land for development. British Columbia is rapidly running out of usable farm land; particularly in those areas of the province where both soil and climate favour agriculture. These are the areas in greatest demand for urban and industrial development. In many areas where land is

B.C.'s prime agricultural land is caught in the squeeze of our rapidly expanding population. The resulting distress signals have not gone unheeded.

available, geographic and climatic barriers together with problems associated with transportation and marketing limit the scope of agriculture. Pasturing by domestic livestock, sheep and wildlife is the only practical means of harvesting the annual grass production.

In British Columbia, 95% of the total land area is in Crown Land. Thus, the government can play a leading role in the preservation of the land for optimum future use. Although small parcels had been set aside for various uses over the years, it was not until fairly recently that it became evident that the supply of multi-purpose land in the province would have to be controlled before it was used up completely.

As a first step towards developing an integrated land use policy the Government of B.C. late in 1972 froze non-agricultural development on all the

lands capable of agricultural use in the province, as well as all lands which were at the time taxed or zoned as farmland. There was an immediate negative response from numerous sectors, who felt that the move would stifle urban development, contribute to the withdrawal of funds from development projects, and discourage the entry of young farmers into the industry. These fears have proved to be largely unfounded.

Prior to 1972, the erosion of B.C.'s agricultural land by urban development had reached 15,000 acres a year. This was the primary reason for the establishment of the Land Commission Act. It was primarily to stop this sprawl that the Act was passed. Because agricultural land in many parts of the province also has capabilities as parkland, forestry reserves, and wildlife ranges, urban development was not only removing food-producing land, but potential land for other uses as well.

The government's move in protecting the agricultural land was neither as sudden nor as absolute as it has been portrayed. Planned urban developments were not stifled. In the period between September of 1973 and February of 1975, the Agricultural Land Reserves were set up in each of the regions of the province.

"We toured the province with information prepared by the Canadian Land Inventory," said Gary Runka, "and in co-operation with the regional governments, discussed the proposed agricultural land reserves. We asked the regions to project their urban expansion needs for five years to enable them to carry out existing commitments. And in some cases, where known future developments could affect the agricultural land reserves, we established the reserves with the understanding that their boundaries could be changed at a later date if no practical alternatives could be found."

Today, 11,500,000 acres of farmland are zoned for agricultural use within the Agricultural Land Reserves. This represents about 5% of the B.C. total area and includes about 1% non-arable critical domestic livestock grazing lands.

The initial fear that the land freeze would halt the development of housing has proved largely unfounded. Housing development has indeed decreased during the intervening period, but developers cite a variety of reasons including economic conditions, zoning restrictions, land costs, and increased labour and building materials costs as significant factors. Few, if any, saw the agricultural land freeze as a significant deterrent.

The designation of land as a part of the Agricultural Land Reserve does not, in fact, limit its use solely to farming. The purpose of designating the agricultural land is to protect it from being given over irreversibly to a non-compatible use.

While land in the Reserves is not available for

un-restricted use, it can be, and is being, utilized for number of uses besides active farming. Obvious such uses are for certain types of recreational facilities (such as golf courses), forestry, and wildlife winter ranges.

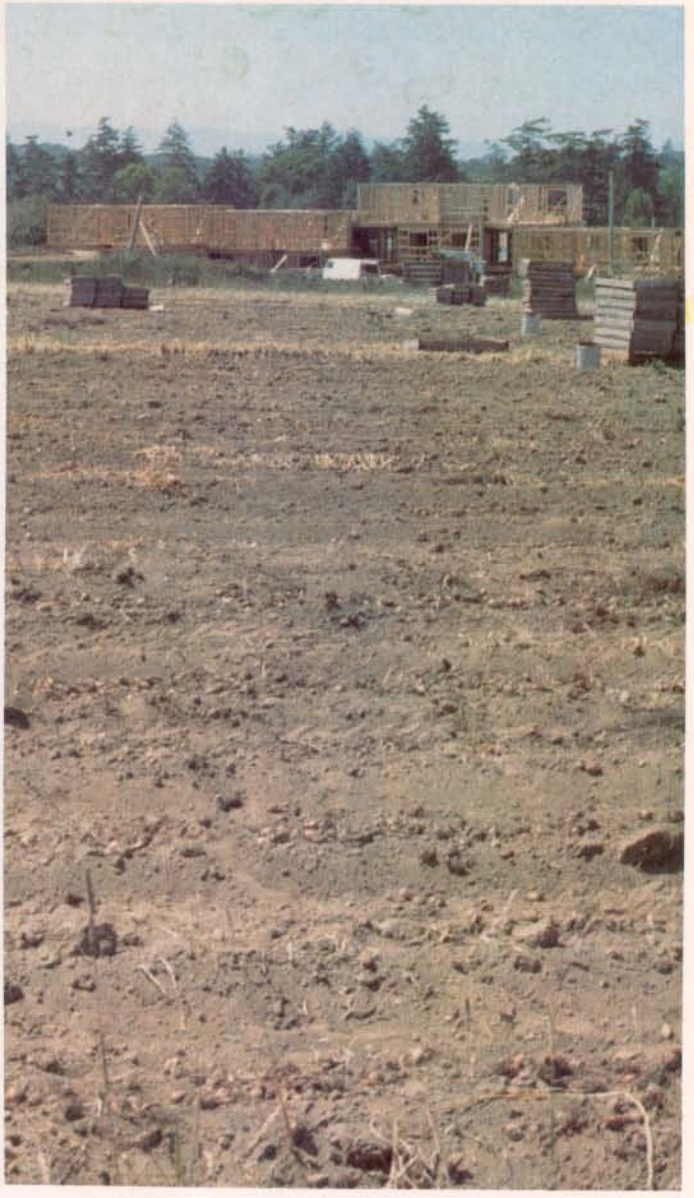
"It was one of the Commissioners," said Runka, "who commented that as far as he was concerned, trees were just big vegetables, and that forestry operations could be quite compatible with preserving agricultural land."

The Land Commission, having now defined the Agricultural Land Reserves in all but one of the regional districts in the province, is streamlining the appeal process which is built into the system. The appeal system is another function of the Commission that, had it been fully understood from the outset, could have prevented a great deal of the general concern that followed the initial land freeze announcement.

To date, the Commission has received over 600 appeals for exclusion, and granted about 30% of them. The number of successful appeals is slowly decreasing — as parcels of unsuitable land included in the original freeze are being released. As well as considering appeals from individuals, local governments can appeal to have parcels released or included. At the time of writing, 24 such appeals (almost all of them for urban development of all or part of the parcel in question) have been made and are under consideration.

Agricultural land is not the only land in diminishing supply. Again because of the geographical layout of the province, land suitable for greenbelt, park and industrial uses is also becoming more scarce. The Land Commission has the authority to purchase land for these three uses and in the case of greenbelt is carrying out this function in conjunction with the local or regional governments involved.

Greenbelt land is generally defined as land in or surrounding an urban area which may or may not be capable of agricultural production. The Land Commission received $5 million for the purchase of suitable greenbelt lands, and has in turn allocated the use of these funds to the regions on a per capita basis. To date, some $2 million of this fund has been spent.



The Government of British Columbia favours an integrated land use policy which includes the preservation by zoning, of the agricultural lands for future food production. The Land Commission Act is an essential instrument to administer this policy.

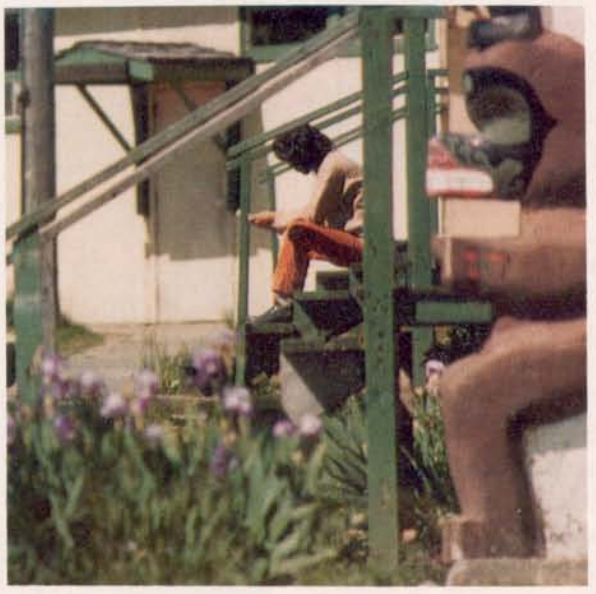
Governments, not just in B.C., but everywhere, face ever increasing needs to control and preserve land for future generations.

The time for indiscriminate land use has passed. The time for preserving it is now.□

British Columbia is a province of mountains. Unfortunately, land which is suitable for agriculture is also ideal for other development.

FOREST CAMPS

by **Ray Wormald**



In prison camps — according to legend, jokes, cartoon and fact — disgruntled, unshaven men in striped uniforms spend their days uselessly breaking up rocks with heavy hammers.

It keeps them busy and it's darn good exercise. But it's non-productive, does nothing for a man's morale or feeling of worth; and it serves only one narrow purpose — a penalty.

In complete contrast are British Columbia's unique forest camps. Here, the penalty aspect is only one consideration. Of far greater importance, are things like development of a man's attitude and character, his responsibilities to himself and his community, development of self-confidence, and the all-important factor of doing something constructive and worthwhile.

Let's consider a young man. He's 19, and he dropped out of school before he completed Grade 10. Since then, with no special training or skill, his time alternated between odd jobs and unemployment. Then that bad night in downtown Vancouver . . . a "smash and grab". A jewelry store window was broken and a handful of rings and watches was stolen. He was caught, charged, convicted and sentenced. Because of his age, the nature of what was his first offence, and various other factors, he was sentenced to six months in a forest camp.

Today, along with nearly 50 other young men who range in age from late teens to mid 20's, this young man is working his sentence at Camp Snowdon about eight miles north of Campbell River on the densely forested east coast of Vancouver Island.

The first year-round forest camp was established at Haney in 1955 when inmates cleared a site for the Haney Correctional Institution. They also started clearing a road leading into big and beautiful Garibaldi Park.

There are 11 forest camps in British Columbia: One each in the Prince George and Kamloops regions; three in the Chilliwack area; three near Haney; and three on Vancouver Island (two near Campbell River and a new one, opened early this year, at Jordan River on the west coast). Five of the camps have sawmills.

The camps are under the jurisdiction and administration of the Corrections Branch of the Attorney General's Department. Considerable co-operation and help is provided by several other provincial departments. The B.C. Forest Service, for instance, works out the actual work program for the men and often makes facilities, equipment and personnel available to assist the program. Similar assistance is provided by the Parks Branch.

The camps and their programs are all basically alike. Each is situated in a relatively remote forested area, and each can accommodate up to 60 men, although the trend today is to have no more than 50. They live in 12-man bunkhouses and eat in a central mess hall. They work an eight-hour day six days a week, and they get paid from 50 cents to $1.50 a day, depending on work done, responsibilities of the job, and other considerations.

It isn't a case of all work and no play. Each camp has recreational facilities and activities . . . some even have teams which play and compete in leagues of nearby communities. Where there are lakes and rivers nearby (and most of the camps have such a setting) inmates are able to swim and fish. Everyone is encouraged to develop or follow hobbies.

As their very name implies, the camps are all in forest settings and the work done by the inmates is almost entirely related to forest resources.

The work program is varied. They clear land, build and maintain roads, create and repair culverts, thin forest stands, plant seedlings, work in Forest Service nurseries, collect and burn slash, look after building and maintenance jobs in and near the camps, cut firewood, fell snags, cut trails and repair bridges.

During the summer months crews are often called out to help fight forest fires. Many Forest Rangers have described the camps as their "best source of dependable and capable firefighters."

As already mentioned, five of the forest camps have their own sawmills. Most of the mills feature pretty outdated equipment (the mill at Lakeview Camp near Campbell River has equipment that was manufactured nearly 90 years ago!), but they do produce lumber and provide a keen challenge to the mechanical ingenuity of both camp officials and the inmates.

Into the sawmills go logs which normally have been salvaged from lakes or from areas logged over many years ago. The lumber they produce is used by the camps for their own buildings and maintenance projects, and by other provincial government departments.

In recent years the "rehabilitation" aspect of the camps has been extended. In what is described as a "work release" program, inmates who qualify are able to work with industry and business in nearby communities. They get the jobs either through their own initiative, with help from friends or contacts, or with official assistance. In such cases the men are transported to and from their outside jobs each day, and at their place of work they receive the same pay as their fellow "outside" workers.

There are also instances whereby the inmates can qualify for "education release" on a day to day basis and attend schools of the camp region to further their education.

The undisputed and proven value of the forest camps is summed up by John Proudfoot, overall co-ordinator of the forestry, farm and industrial program of the Corrections Branch:

"Throughout the entire process the inmates learn how to do things in the woods . . . how to look after themselves and develop a sense of responsibility to both themselves and to their fellow man.

"They soon acquire a keen sense of appreciation for the forest land," he continued, "and they learn to work as a team.

"For the most part the men regard their work as constructive and worthwhile."

And all of this, of course, reflects the basic philosophy of the whole forest camp program.□

After The Dust Settles

by **R.J. Chick Childerhose**

By the late 1950s the wooden houses were covered with the coal dust of half a century. Not only the houses, the countryside itself. It was as if black snow fell in the East Kootenay all year round.

The discovery of coal outcrops in the Crowsnest Pass area in the southeast corner of the province, had been reported in 1858. Yet it wasn't until '98, with the completion of a CPR line through the Pass, that the coal mining boom began. It peaked in 1910. That year a work force of nearly 8,000 men dug out some 3.3 million tons of coal.

A decline set in when oil and diesels replaced coal and steam. The mining villages, for want of payrolls, were left to slow decay. The setting for their despair was the black ruined hills around them.

In the 1960s Japanese steel industry began buying Crowsnest coking coal, and the environmentalist movement swept North America.

The Kaiser Steel Corporation of California contracted with Japan to supply 75 million tons of coking coal over a period of 15 years. A Canadian subsidiary was formed to produce the large quantity of coal, mainly by strip-mining.

The announcement brought on a public outcry, which had already been stemmed by such issues as logging close to streams and dumping mine tailings in lakes.

The quarrel was also with the provincial government. The environmentalists accused the government of

supporting any land use scheme that ignored potential ecological damage.

The coal sales to Japan came at a time of awakening public awareness. British Columbians were faced with a choice of preserving natural areas regardless of the commercial potential, or of using the coal resource to expand the economy and provide employment.

With these questions of land use coming forward, improvements were made in mining regulations. As of April 1, 1969, no mining operation, from exploration through development to production, can commence without a recognized reclamation program approved by the Department of Mines and Petroleum Resources.

In 1973 new guidelines were issued advising steps to be taken to restore natural conditions at the conclusion of mining operations.

Since 1969, only one company — Placid Oil — has started up, mined out its workings, and restored the property. Placid Oil's Bull Run open-pit copper mine near Cranbrook began operations in 1969 and closed down in February, 1973.

While the plant crew finished milling the ore which had been stockpiled, the entire pit crew was retained to reslope the waste piles in and around the pits.

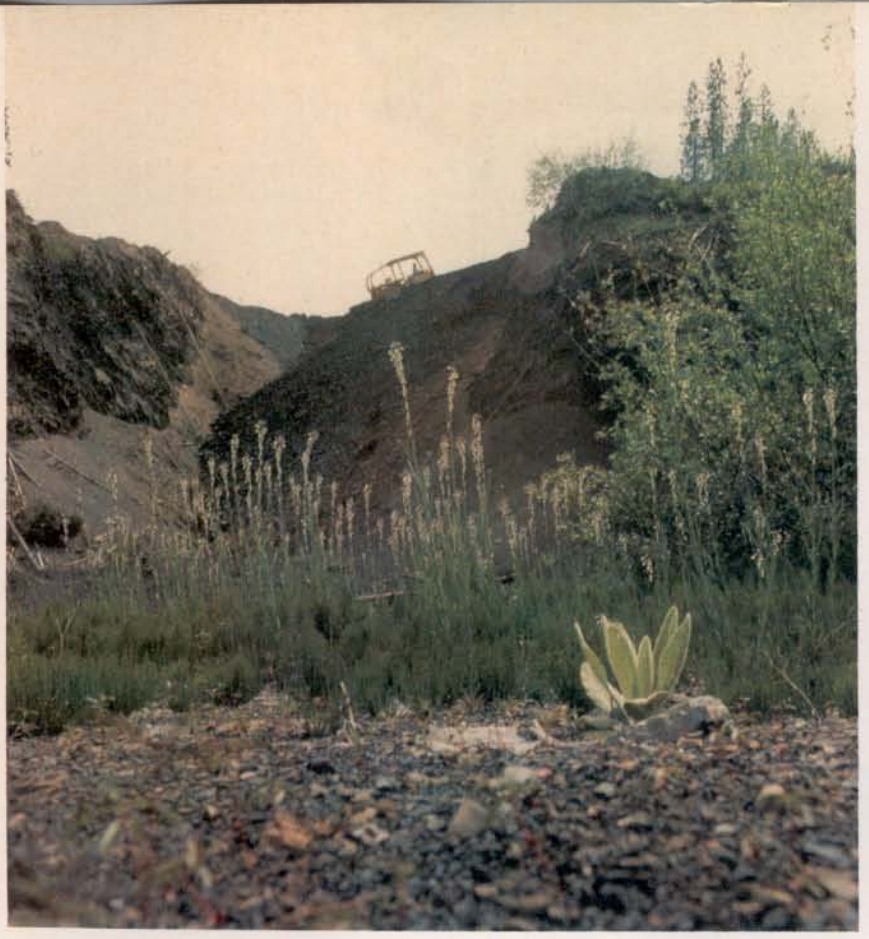
Over a period of three years the ore was mined from two adjacent pits. Thick deposits of gravel and glacial material were removed, the top soil was piled separately, and both were stockpiled away from the waste rock. Tailings from the mill were placed behind a small dam nearby and all water was recycled.

The reserved top soil was spread and in the Spring of '74 the area was seeded with a seed mixture selected to suit local conditions and the appetites of the local wildlife. Clumps of brush and trees were preserved during mining and these shelter the grazing animals and act as a natural seed source. The wet Spring of '74 gave the crop a good start and by the Spring of '75 the grasses and legumes were well established. Gaps were reseeded and fertilization continued.

After three years of grooming and seeding, the mine area as seen from a distance is a series of grass-covered rolling mounds at the base of the mountain. The tailings pond is drained and seeded; the deeper pit forms a small rockbound lake. It looks like a park, wildlife abounds, and people have started to regard this as a recreational area.

During the Summer of 1974 the Fish and Wildlife Branch initiated a continuing study to monitor wildlife use of some reclaimed strip mine areas in southeastern British Columbia. The study was focused primarily on Bull River Mine, and Kaiser Resources Ltd.'s McGillivray and Erickson pits.

Reclaiming mine sites is a matter of time and planning. Nurseries play a vital role in this process.



After the first year of observations on recently reseeded areas the conclusions were that '. . . the ungulates do use reclaimed areas. Amount of use, however, depends on amount of growth and species composition . . . use of these areas should increase with time.'

In the south-east Kootenay's where Kaiser Resources Limited is reclaiming mine areas, test pits and exploration roads date back 30 years. This company has a full-time reclamation staff of six, but hires some 60 students for the summer. Planting is carried out between mid-April and the end of June. Then the planting crews work in the company's nursery, where native plants selected for survival and nutritive value to wildlife, are grown for replanting in reclaimed areas.

If there's a secret to successful reclamation of mine sites, it lies in pre-planning, preparation and anticipation of the day the mine closes.

Complicating things in British Columbia is the extreme environmental diversity. Mines are found at elevations from sea level to 10,000 feet. Rainfall can vary from ten inches per year to over 200; the climate from mild Pacific to polar northern interior.

Abandoned mine sites in the Crowsnest can now be seen returning to a natural state. Deer and elk are showing up to graze where, for decades past, nothing has grown.

It's heartening evidence that land use conflicts can be resolved; that public awareness and concern for the environment can pay off.□

"No mining operation, from exploration through development to production, can commence without a recognized reclamation program."

Land

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