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north fork of the flathead: A CANADIAN VIEW

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The British Columbia portion of the Flathead River watershed, located in the extreme southeast corner of the province, contains 40 miles of pristine headwaters of the North Fork of the Flathead. This Fork, along with the Middle and South Forks (which originate in the U.S.), drains a large area of northwestern Montana, including the west slope of Glacier National Park. The entire 623-square-mile area of the B. C. portion of the Flathead watershed lies above 4,000 feet elevation and is geographically isolated by high mountain passes and long, inhospitable winters. The northern two-thirds of the main Valley and the tributary watersheds are characterized by typical glaciated U-shaped trough valleys with narrow floors ¼ to 1 mile wide. The lower 12 miles of the Valley, extending to the 49th parallel, widens to about 10 miles. The Valley floor rises sharply to high, broken ridges of the Clarke Range to the east and the MacDonald Range to the west. With spurs of these ranges extending well into the Valley, a large proportion of the area supports subalpine and alpine ecosystems.

There is a possibility that as the path of coal mining development pushes farther into the frontier, this watershed could become subject to our insatiable search for energy and demands for increased material goods.

History of Human Activity

Although the activity of white men may extend far back in time, one of the first documented parties to travel through the B. C. portion of the Flathead Valley was the first International Boundary Survey in about 1859. A second survey was conducted in 1907, by which time the Flathead and its resources had been exploited for approximately 20 years—primarily for its fur and wildlife resources.

Oil, Gas, and Coal Exploration

Natural crude oil seepages in the Flathead Valley had been known and used for medicinal purposes by native Indians for many years before Dawson conducted the first geological reconnaissance of the area in about 1885. This survey began the long history of interest that would be maintained and sporadically pursued for the next 90 years.

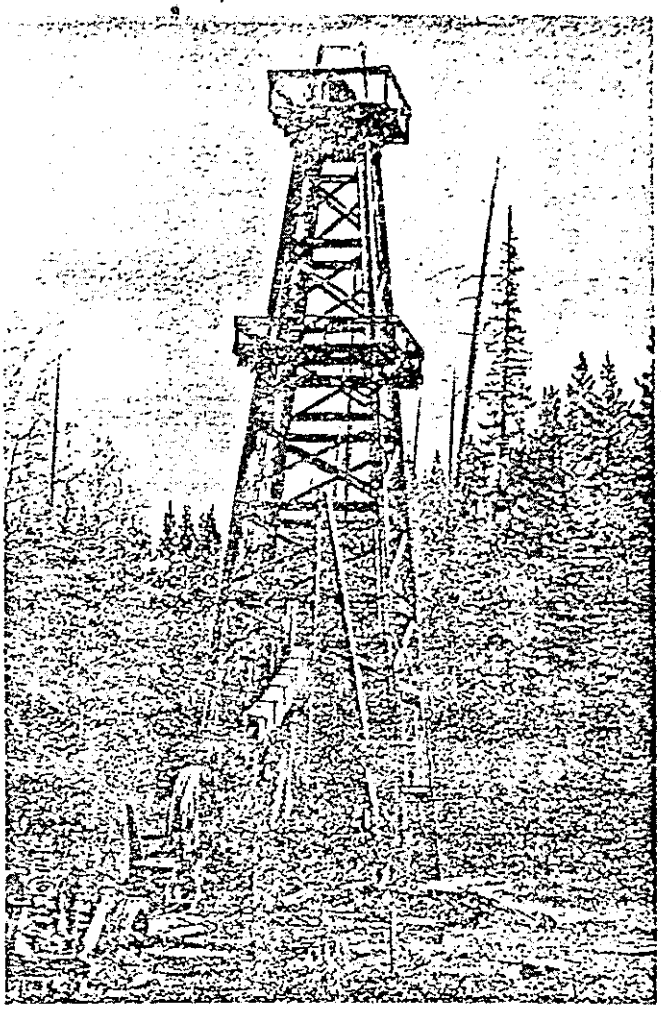
The first claims for oil and gas were laid in the Akamina and Sage Creek areas in 1900 by the surveyor Archie McVittie, representing a group of investors from Cranbrook. Assisting in this venture was a horse packer and guide, J. G. (Kootenai) Brown, who was appointed the first Federal Game Guardian for the Kootenai Lakes Forest Reserve in the 1880's; this reserve became Waterton Lakes National Park in 1911, with Kootenai Brown installed as the first Forest Park Ranger.

Access to these oil and gas claims was by several routes. Original access was by way of Akamina Pass from Waterton Lakes area, while access to the Gloyn oil fields was gained by a winter road slashed up Kishinena Creek from Belton, Montana. Apparently drilling and accessory equipment were hauled in by this route. Interest died in this area within a short time, as spasmodic drilling turned up only isolated pockets of oil.

Oil and gas exploration continued to thrive in other areas of the Flathead as John McLatchie, land surveyor, conducted extensive surveys in the area in 1904, resulting in further mineral claim staking.

The year 1913 saw a boom of coal and oil exploration as several more geological surveys were conducted. At this time a wagon road was constructed from Corbin, over Flathead Pass (elevation 5,790 feet), south to the 49th parallel. A survey in 1909 for a rail line paralleled approximately the route of the wagon road. The geographic locations of the coal fields were documented about this time as it was determined that the Crowsnest coal field extended south from the Elk Valley into the Flathead in the area of McLatchie and McEvoy Creeks. Another coal outcropping occupied the lower reaches of Howell, Cabin, Burnham, and Couldrey Creeks, situated on the west side of the Flathead Valley approximately 12 miles north of the Montana border. With the access created by the wagon road constructed south from Corbin, a short flurry of exploration ensued. However, until recently, inventory and development of the coal fields have been minimal because of the geographical isolation of the deposits from major transportation routes and the low market demand for coking coal.

By 1930 three oil and gas companies were again active in the Flathead. Canadian access was still by only two routes, Flathead Pass from the north and Akamina Pass (elevation 5,840 feet) from the Waterton Lakes area of Alberta. The B. C. Oil Company and the Crowsnest Glacier Oil Company concentrated their efforts in the Sage Creek and lower main Flathead Valley, while the Akamina Creek Oil Company was actively exploring the headwaters of Kishinena Creek. Developments included the construction of at least three oil derricks of which two, both in the lower main Valley, are still standing today. Exploration was spasmodic at best and eventually abandoned in the late 1930's, as drilling could not define sizeable pockets of oil.



Mike Lamb

Oil derrick at Couldrey Creek. A remnant of oil exploration of the 1930's, this derrick is now protected by the Archaeological Sites Act.

With the advent of increased access in the mid-1960's, a flurry of mineral exploration and activity dominated the scene. Although over 1,200 claims were staked for copper in the Kishinena, Sage, and Commerce Creek areas, lack of ore in economically accessible areas led to the abandonment of most mineral interests.

Renewable Resources

Forestry

The greatest forest capabilities of the Flathead drainage are restricted to valley bottoms and adjacent protected slopes. Because of the high elevation and extensive alpine areas, productive forest lands occupy less than one-half of the total area.

It has been estimated that between 1830 and 1931, a minimum of 34 fires, started by either man or natural

causes, burned a total of approximately 73,000 acres, or 43 percent of the productive forest areas.

In 1929 a severe forest fire originating in the lower Flathead Valley caused extensive forest damage in the Sage, Commerce and Howell Creek drainages. In 1934 and again in 1936 major fires originating outside the Flathead Valley, in the lower Elk Valley near Elko, spread with the prevailing southwesterly winds over the MacDonald Range into the upper Flathead. The fire, spreading up the Lodgepole and Ram Creek drainages, jumped into Upper Howell, 29 Mile Creek, and Harvey Creek, resulting in major forest damage.

By the 1950's the B. C. Forest Service had gained control over widespread forest fires by strict surveillance during the fire season. Hence forest succession has progressed unhindered and present forest stands in the Flathead are composed predominantly of second growth immature lodgepole pine in fire-prone areas, mature stands of Engelmann spruce in moist areas protected from fire, and some Douglas-fir and western larch on drier sites. The alpine forest composition is primarily whitebark pine and alpine larch.

Logging activity in the Flathead drainage until the late 1960's was minimal. About 1925 a semi-portable mill was established in the Akamina Pass area; some wood products were shipped east to Waterton Lake. This mill also supplied some timber to the oil companies for derrick construction in the early 1930's.

Intensive forest utilization during the first half of the century was restricted by the lack of adequate transportation facilities running the entire length of the Valley, combined with low market demands for small timber. In 1930 a reconnaissance of the log driving capabilities of the Flathead River and its tributaries was made; however, no development occurred. Transportation facilities out of the Valley for timber products was to go hand in hand with facilities developed for shipping coal and oil. However, because no prospects of oil production were realized, interest in the rail line surveyed in 1909 faded. Some logging did take place in the lower Flathead in the 1930's with access out of the Valley to the south.

In June 1963 an offshoot of Hurricane Freda, on its way north up the Flathead, left a path of twisted and broken timber stretching sporadically the length of the entire Valley. Areas severely damaged were Sage, Kishinena, Coal, and Harvey Creek drainages. This hurricane proceeded north to leave a similar mark of timber destruction in the Elk Valley.

Within 2 years, residual populations of bark beetles in the Flathead exploded and infested dead and dying timber to epidemic proportions. The B. C. Forest Service, in an attempt to control the spread of beetles, initiated an extensive burning and clear-cut logging program. Within several years new forest access routes were constructed through the Harvey Creek and Cabin Creek passes, and the old Flathead Pass road was upgraded.

The clear-cut logging program was based primarily on the beetle "problem" with little consideration of the

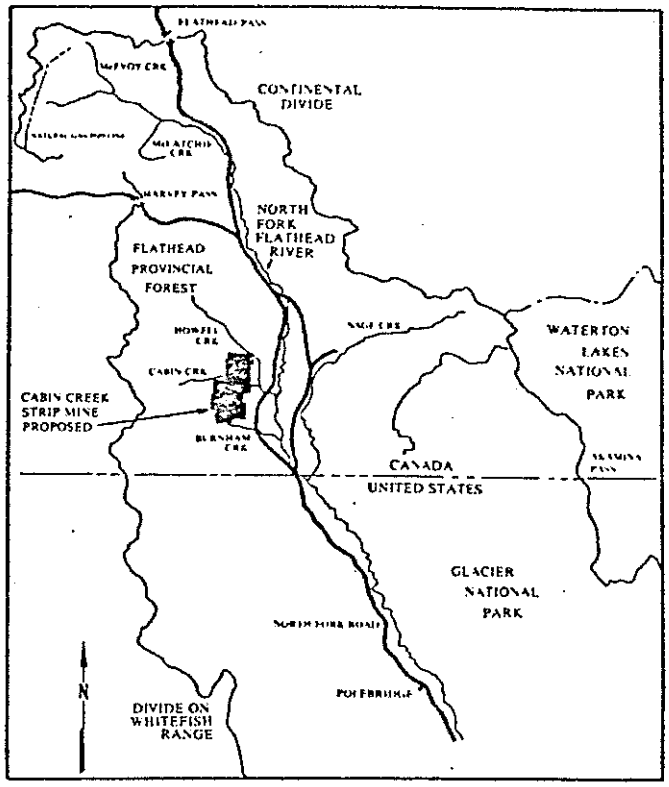


Figure 1—Flathead River drainage in British Columbia and northwestern Montana.

ramifications that this type of development would have for the other resources of the Valley. Extensive areas were severely disturbed by tractor and skidder logging in the headwaters of Howell Creek, parts of Commerce and Sage Creeks, Harvey Creek, and the headwaters of the main Flathead between 1965 and 1972. Some logging is still active in Commerce and Sage Creek and the upper tributaries of the Flathead. A moderate amount of winter logging has taken place in the last several years, removing mature spruce from the main Valley bottom and active floodplains of the river near Commerce Creek.

The extensive access construction program initiated in about 1965 by the B. C. Forest Service resulted in relatively free access to the entire watershed and its resources. A new era of development had begun.

Agricultural Attempts

Although the lack of agricultural capabilities of the Flathead has been realized for many years, in the 1960's several local cattlemen attempted to graze livestock. However, this venture terminated in about 1971 because of high transportation costs, poor forage values, and expansive areas of dense, immature lodgepole pine for the cattle to get lost in.

Wildlife and Fisheries

The extensive forest fires of the late 1920's and mid-1930's reversed succession to shrubland on south- and west-facing slopes capable of supporting high populations of elk and moose. Resident moose in the B. C.

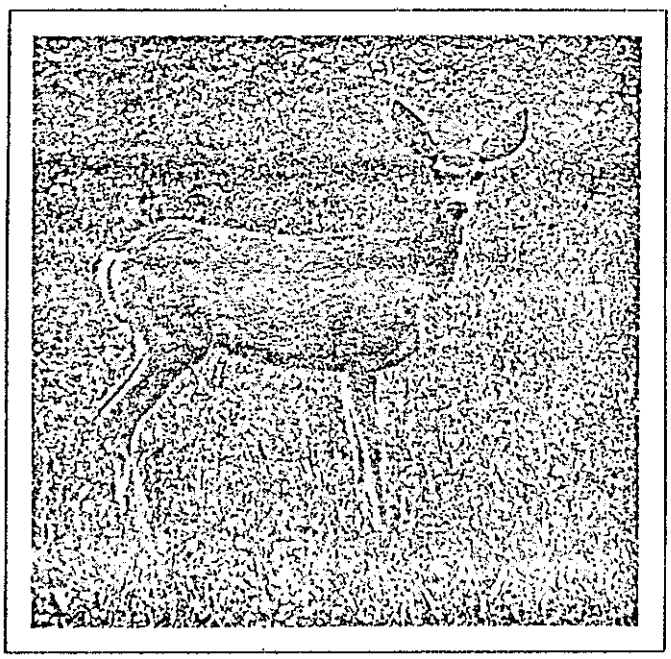
Flathead Valley are believed to have migrated north from Montana and are considered to be the Wyoming (*shirasi*) subspecies, while the moose in the adjacent Elk and Kootenay watersheds are the Canada (*andersoni*) subspecies believed to have a post-glacial origin in the north. Rocky Mountain elk now resident in the Flathead probably originated from the eastern foothills of the Rocky Mountains in Alberta, while the whitetailed and the mule deer may have emigrated from the south.

Elk and moose populations flourished during the late 1940's and early 1950's, peaking in the late 1950's when, because of forest succession, shrublands were replaced with second growth lodgepole pine. The absence of fires in recent years has prevented the natural development of new shrublands, and wildlife numbers in the main Flathead Valley are now stabilized at moderate levels.

Rocky Mountain bighorn sheep and Rocky Mountain goat frequent the south- and west-facing slopes of the Rocky Mountains along the eastern border of the Flathead Valley. Populations of goats inhabiting the western border (MacDonald Range) were depleted by over-hunting, the result of increased access created in the mid-1960's. The mountain goat hunting season has been closed since 1972 and the populations on both bordering mountain ranges are recovering.

The Flathead Valley also contains significant populations of grizzly and black bear. The B. C. grizzly bear hunting season was temporarily closed in 1975 and 1976 in order to assess population levels and the impact of clear-cut logging on dispersion. The survey revealed a healthy, viable grizzly population.

There are four active guide-outfitters operating in the Flathead Valley who depend upon the elk, moose, grizzly, black bear, and deer populations. Although present trapping in the Valley is moderate, there are abundant populations of lynx, marten, mink, and beaver. Recently, a small population of wolves was studied. The pack occupies a section of the Valley which spans the international boundary.



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Dave Books

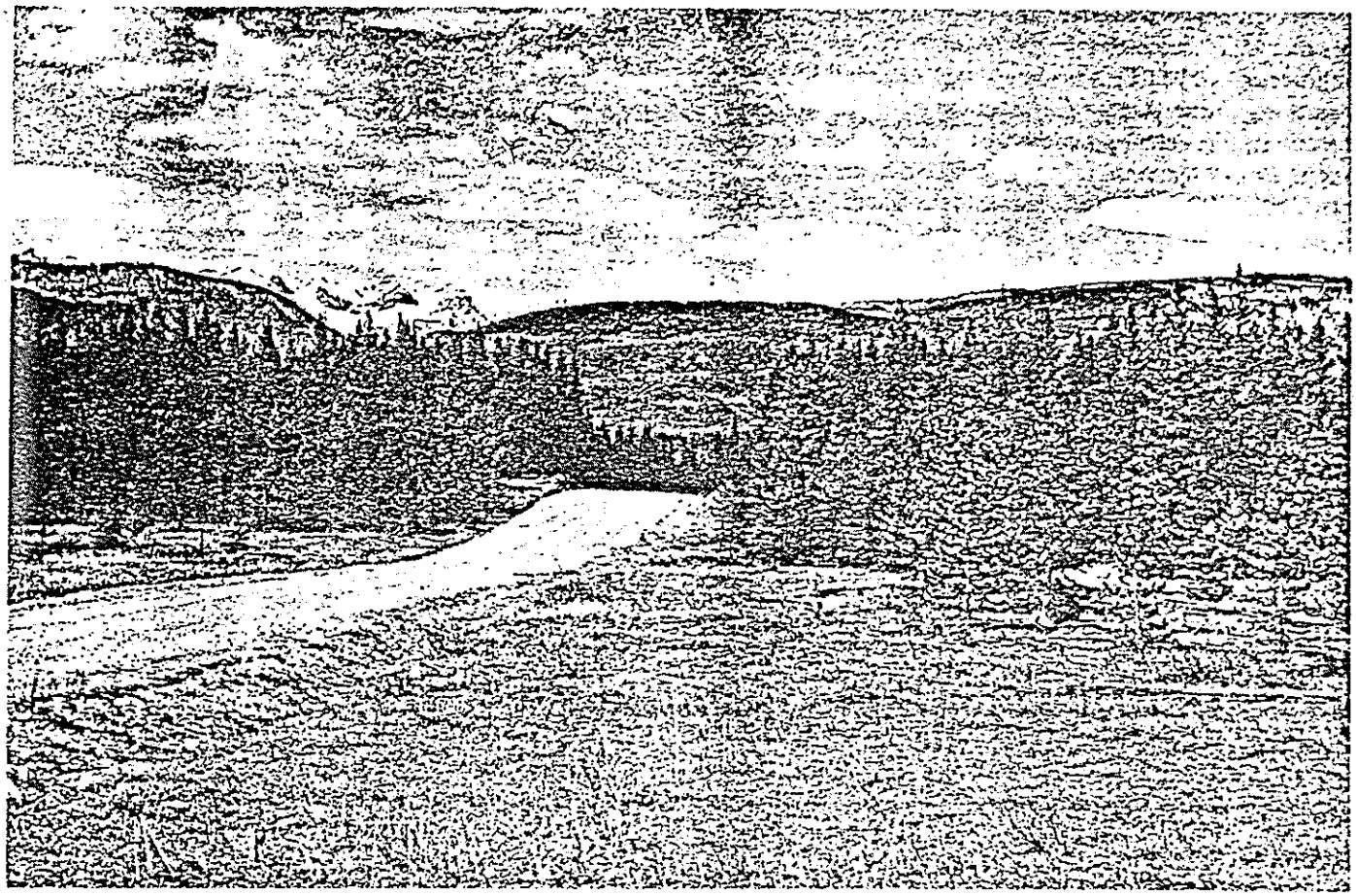
The North Fork and its tributaries maintain abundant fish populations, including west slope cutthroat trout, mountain whitefish, Dolly Varden char, and Montana grayling. Presently there exists a fishery for large Dolly Varden char beginning about mid-July as they make their way upstream, presumably from Flathead Lake in Montana, to spawn in many B. C. tributaries to the main river. Historically, this fishery produced individuals up to 26 pounds; however, recent catches range between 6 and 16 pounds.

There is speculation that a good proportion of the B. C. section of the Flathead River system is important for spawning and juvenile rearing of cutthroat trout as well as Dollies, both populations of adults originating in Montana. The whitefish populations of the area are presently being fished at moderate levels. The Flathead also supports a very small population of grayling, the only area where this species has been recorded in the Pacific drainage of British Columbia. These fish are most likely of Montana hatchery origin, or remnant stocks surviving the last glacial age in the Missouri Refuge.

The present fishing pressure in the North Fork is moderate. Typical of many headwater streams in the area, the Flathead is relatively unproductive, hence increased fishing pressure or habitat alterations could have a significant impact on future populations.

Today the Flathead River in B. C. is still relatively pristine with few road crossings, virtually no access paralleling the river on the active floodplain, and very little permanent human disturbance. The main river is characterized by a low-gradient, oxbow floodplain development which maintains spruce swamp, back eddies, and meandering channels.

The recreational capabilities of the North Fork Valley are relatively high, considering the extensive alpine area.



Norman Ringstad

Site of proposed Cabin Creek mine (the hills center and far left). Cabin Creek separates the two hills.

The Akamina-Kishinena Creek areas have been proposed for incorporation in a federal park to complement Waterton Lakes Park to the east and Glacier National Park to the south. This proposal, first put forth before 1930, was to include 79 square miles of the Kishinena, Akamina, and Starvation Creek drainages. Modificatons of this original proposal are still being pressed today despite continual objections based on the argument of the value of extractable nonrenewable resources in the area.

Coal Development in the Flathead Valley

Renewed interest in the coal fields of the Flathead Valley became evident in the early 1970's when two major exploration companies applied for exploration rights. Interest has been sparked by predominantly foreign expanding market demands for coking coal and eastern Canada's recent demands for coal for thermal-electric development. Advances in mining technology along with the value of coal are also making extensive overburden removal and extraction of coal by strip and open pit mining techniques feasible.

Rio Algom Ltd. is now proposing to establish an open pit coal mine operation in the lower Flathead Valley at the confluence of Howell and Cabin Creeks. To date, activity has been restricted to intensive inventorying of the coal deposits in two mountains flanking Cabin Creek about 2 miles upstream from its confluence with Howell Creek.

The proposed mine would consist of two open pits, one on each mountain. Each pit would be approximately 1 square mile and would reach a depth of about 2,400 feet. Projected annual production will be 3 million long tons per year, with a life span of at least 30 years. The coal deposits of this immediate area are estimated to exceed 150 million tons.

The mine, if developed, will require extensive space for a coal washing and preparation plant, a series of large coal fines settling ponds, and a railway turnaround and loading facilities. The Howell-Cabin Creek floodplain near the confluence with the Flathead River has been suggested for the development area. An extensive dewatering program would be required to facilitate flood control. Preparation of this area would require extensive channeling and even elimination of the lower sections of Cabin and Howell Creeks. Couldrey Creek immediately to the south could also very well be modified.

Transportation of the coal out of the Flathead will require a spur rail line to connect to existing rail lines to Roberts Bank, the coal depot on the Fraser River estuary at Vancouver.

The proposed mine is geographically isolated from existing living facilities, suggesting the need for a new townsite in the Valley. The population of the new town could exceed 5,000 people at full mine production. The work force could approach 1,000. A new town, if constructed, would necessitate increased access to populated areas. A major highway system would be inevitable.

The advent of coal mine development in the Flathead suggests the complete breakdown of the major barriers to intensive exploitation of all the resources of the Valley—i.e., restricted access and transportation facilities.

Integrated Resource Management

The devastation of hurricanes, beetle infestation, and even logging are often underestimated, while the capabilities of forests to regenerate have often been overestimated. The "cut and get out" forest practices of the nineteenth and early twentieth centuries have been replaced with sustained yield forest practices based on the concept that man should not remove trees faster than nature with man's help is capable of replacing them.

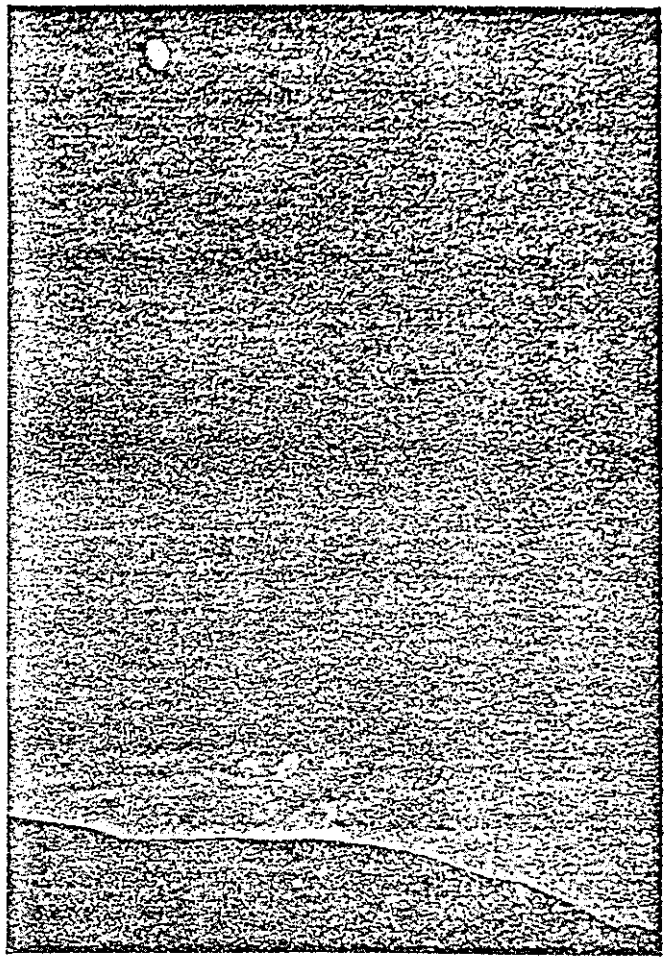
The timber resources of the Flathead Valley have been placed in a larger sustained yield unit (Fernie Public S.Y. U.). Reinventory of timber resources and recalculation of sustained yield is carried out every 10 years and allowable harvests are adjusted accordingly.

Wildlife and fisheries management is also based on the concept of sustained yield implemented to insure the long-term integrity of the resource base. Forestry, fish and wildlife, and recreation are being integrated into a long-term resource management plan designed to optimize in perpetuity the renewable resources utilizing the land and water base.

The concept of integrated resource management cannot include resource exploitation, which inherently destroys the resource base by the removal or use of that resource. Such is the case with open pit coal mining using present-day technology. Reflecting on past resource exploitation policies, coal mining presently works under a "cut and get out" concept. The argument of the mining interests that only a small area is directly affected must be viewed in light of the degree of disturbance and the necessary associated facilities such as industrial preparation sites, new townsites, and road, rail and energy corridors. Thus the impacts reach far beyond the actual pit site.

Many engineers still view such developments in the perspective of a few fish and wildlife species versus a multi-million dollar development bringing economic health and welfare to the region. After all, "You can't stop progress."

It is not the question of wildlife and fish versus progress for man, but man's dependence upon the renewable resources over the long-term versus his interests in sustaining a very high standard of living defined in terms of material wealth gained through exploitation of nonrenewable resources.



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With the advent of unrestricted access and transportation facilities in the Flathead, the Valley will be opened to the exploitation of all resources. The exploitation of renewable resources can be controlled by implementing integrated resource planning. However, the increasing demands for minerals and coal will take a heavy toll on the capabilities of the land and water base to produce a sustained flow of renewable resources in perpetuity.

The decision of whether coal development will proceed in the Flathead depends upon socio-economic and political forces beyond the scope of the authors. However, throughout northern and western North America, society is wrestling with the problems of energy exploration, exploitation, and transportation. As stated previously, "cut and get out" forestry and fisheries and wildlife management practices have been replaced with sustained yield resource management. Although coal is not a renewable resource, the planned and orderly development of coal exploitation over a prolonged period can replace the expediency which prevails in the industry. Besides providing obvious social and economic stability, such an approach would tend to minimize social impacts and insure the maintenance of a quality environment in the Flathead and elsewhere.