A STUDY OF THE DEER PARK WAPITI TRANSPLANT

Submitted by:
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Philip McNeely

REMARKS

weak on the current field study.
good background material
well-written, organized
maps well done.
considerable report for the minimal amount of data

B+

Roc:
• Map printing detracts from otherwise good presentation

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PROLOGUE

In this report we never refer to elk. To call Cervus elaphus spp. an elk is a misnomer. The name elk refers to a European moose therefore we prefer to use the name borrowed from the Shawnee Indians "wapiti", meaning white rump.

I. Introduction

A. Purposes

Three distinct purposes for this study can be identified. The first purpose is to compile and survey all information on the Deer Park wapiti transplant. A second purpose of the study is to relate this transplant to other transplants in the literature. The final purpose is to gather data and arrive at conclusions that will not only assist in the proper management of the Deer Park wapiti, but also be applicable to transplants in other areas.

B. Authorization

This study is authorized by Len Dunsford, Coordinator of the Wildland Recreation Program at Selkirk College, Castlegar, B.C., in partial fulfillment of the course requirements in the final year of the Wildland Recreation Program.

C. Content Overview

In this report, the rationale for the study is stated. This includes discussion of animal transplants in other countries,

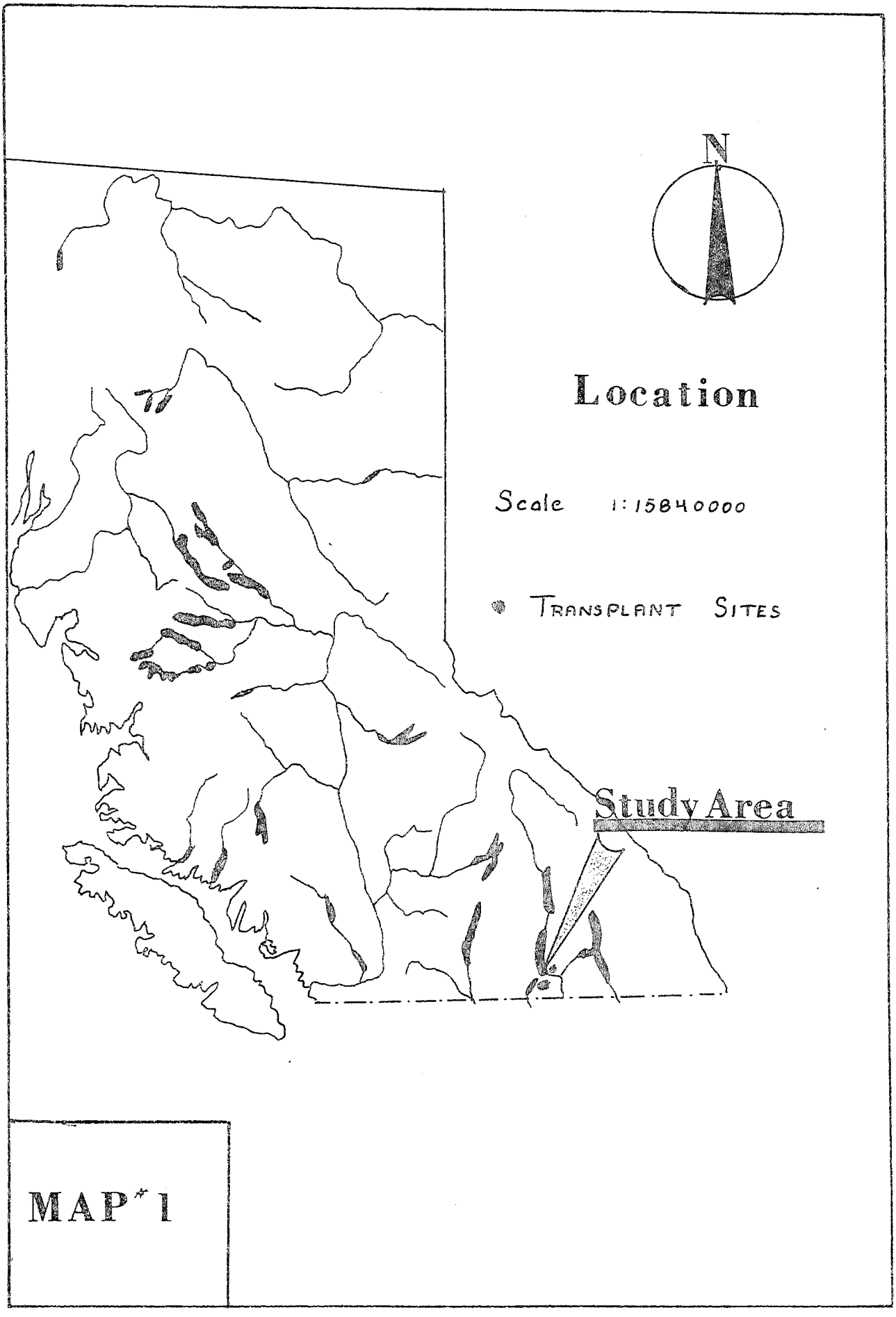
wapiti transplants in the Christina Lake region of B.C., and the land use activities in the Deer Park area.

Following the rationale, is a short history of the Deer Park area from the time of the Lake Indians to the commencement of the wapiti transplant.

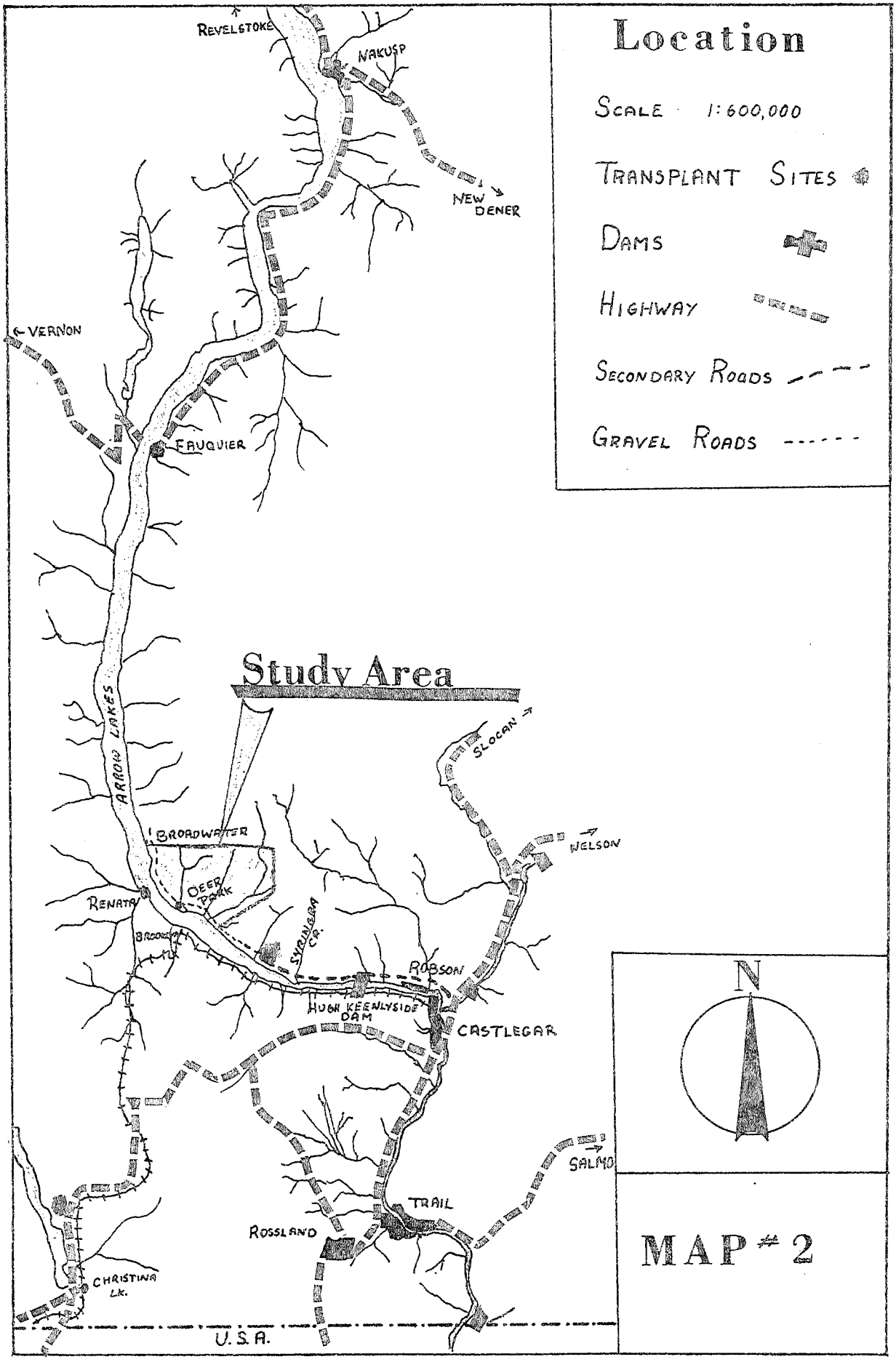
The reasons for the transplant and its effects are dealt with in the fourth section of the report. Included in this section are some of the problems which confronted the Nelson Fish and Wildlife Branch as a result of the transplant, as well as the solutions which were implemented.

Next, the factors considered in the study are outlined. These include an evaluation of the transplant, a comparison with other transplants, specifics of the original transplant, and our own observations, including methods used, anticipated problems, vegetation, vegetation preferences, specific findings, and a shrub species list.

The concluding sections of the study present an evaluation of our findings and recommendation for further study.



MAP* 1


Location
SCALE 1:600,000
TRANSPLANT SITES
DAMS
HIGHWAY
SECONDARY ROADS
GRAVEL ROADS
Study Area
REVELSTOKE
NAKUSP
NEW DENER
VERNON
FAUQUIER
ARROW LAKES
BROADWATER
DEER PARK
RENATA
SLOCAN
NELSON
SYRINGA CR.
ROBSON
HUGH KEENLYSIDE DAM
CASTLEGAR
SALMO
TRAIL
ROSSLAND
CHRISTINA LK.
U.S.A.
N
MAP # 2

II. Rationale for Study

A. Transplants in Other Areas

Animal transplants are used in a variety of ways. Re-stocking dwindling populations of animals in a particular area is one major purpose of transplants, while the re-introduction into areas that have in the past supported a specific species which has been eliminated is another purpose. Transplants are also used to introduce an exotic species into a particular area that is thought to have a suitable habitat.

Some of the reasons for increasing or introducing a population of animals to a specific area include wildlife research, aesthetic appreciation, trophy hunting, wildlife management, habitat enhancement and increase in available supply of meat.

Probably the best documented wildlife transplants occurred in New Zealand during the late nineteenth and early twentieth centuries. In 1905, fifteen American wapiti were introduced to New Zealand and current estimates place the present population of wapiti at approximately two thousand animals (Wodzicki 1961).

Before European settlers arrived, New Zealand had only two indigenous species of mammals. Over a number of years, thirty-three exotic mammals were introduced into the area. For

this reason it has become a veritable haven for scientific research into the many varied effects of animal transplants.

The major problem of the total New Zealand transplants was that the ecology had evolved in isolation for at least seventy million years (Fleming 1962a). Therefore, the biotic community, especially the native vegetation, was not genetically equipped to cope with the effects of browsing and trampling by the transplanted animals. The result in many cases was denuding and destruction of the vegetation and erosion of the soils (Howard 1964).

Similar results after animal transplants can be documented in other areas. For example, a Mountain Goat (Oreamnus americanus)transplant program was initiated in Olympic National Park in the state of Washington in the late 1920's. The goats also reached a population density that appeared to have adverse effects on the alpine/subalpine vegetation in the park. The park administration reacted by developing a program designed to keep both Mountain Goats and vegetation healthy through careful management of the whole ecological goat-plant relationship (Olmstead 1977).

B. Christina Lake Transplants

During the period between December, 1970 and October, 1972, there were four transplants totalling forty-nine wapiti into

the Paulson/Christina Lake region of the West Kootenays. According to the available information, there have been three studies up to the present of these wapiti. Two have been published and one is still being compiled.

The first study in this area was titled "A Study of Transplanted Wapiti, Cervus canadensis, in the Paulson Area of West Kootenay B.C.". It was done by E.L. Coffin as a partial fulfillment of the requirements for the degree of Masters of Arts in the Teaching of Biological Science, Washington State University in July, 1972.

Coffin includes in his study a history of the transplant program, recordings of wapiti movements and a habitat evaluation. Methods of procedure were first hand visual sightings and reliable reported sightings. Food preferences were determined by direct observations of feeding and by examination of areas where wapiti had recently foraged.

In his conclusion, Coffin states that if the transplant site is well chosen to support a viable population of wapiti without serious conflict, then the animals have no real need to seek alternative habitat areas.

Between December, 1974 and June, 1975 a second study was carried out by A.M. Eyres, C. Elion, and B. Hopkins of the same area. It was commissioned by E. Muffley of the Trail Fish and Wildlife Association and financed by the federal

government under the "Local Initiative Project Program".

The purpose of this study was partially as a follow up report on the previous study by Coffin. Determination of the success of the transplant, further evaluation of habitat, health of the animals and possible interspecies competition were to be considered. Methods of study were direct site analysis of animals and feeding preferences, soliciting public information on wapiti sightings, and finally, aerial reconnaissance.

Conclusions of this study confirmed the utilized browse species as recorded in Coffin's 1972 study. They also stated that the population appeared to have doubled, reaching a total of approximately one hundred animals. No information was available to assess possible interspecies competition.

C. Deer Park Transplant

Although the Deer Park wapiti transplants took place at about the same time as the Christina transplants, no comprehensive study of them has been carried out. Because of man's increasing pressure on wildlife, studies and management practices should be done on a continuous basis. This is especially true when dealing with animal transplants. We undertook this study of the Deer Park wapiti in the hopes that our findings would contribute in even a small degree to a better understanding

of these animals and their habitat.

For proper habitat management, a study of the present and future land use conflicts in an area is essential. A close analysis of the Deer Park area reveals a number of past, present and potential land use conflicts.

The Deer Park area is classified under the CLI (Canada Land Inventory) Land Capability for Wildlife - Ungulates as Class 2W. (See Map #3.) The CLI description states that lands in this special class are designated winter ranges on which ungulates from the surrounding areas depend.

"Animals distributed over hundreds of square miles in the spring, summer and fall are forced by increasing snow depths at higher elevations to concentrate into more restricted, lower elevation areas in mid- to late-winter. Winter range, because of its scarcity and intensity of use, is more sensitive to land management decisions" (Black, Scherzinger and Thomas 1976). The preceding quote supports the contention that winter range size and quality is a critical factor in wildlife populations. Any modification of thiswinter habitat will invariably have an effect on the wildlife.

Although the North American Indians were the first men to influence the Deer Park area, it is doubtful whether they were involved in large scale habitat manipulation. Their prime concern was hunting the wildlife for food.

With the construction of the Robson to Christina Lake portion of the C.P.R. mail line to Penticton in the late 1800's came the first appearance of white settlers with their livestock and domestic vegetation. The early 1900's, especially after World War I, saw the Deer Park area become an established agricultural community with a school and churches. Deer Park continued as a viable agricultural community until the start of the construction of the High Keenleyside Dam in 1964. The present small number of residents of Deer Park still maintain gardens and remnants of the once very productive orchards.

Two major factors need to be considered in the establishment of the Deer Park area as an agricultural community. The first and foremost consideration is that the utilization of the area as farmland resulted in a drastic reduction of the land which had previously been used by the ungulates. The second, conflicting, factor is that prime agricultural areas are often prime wintering areas, and it is well known that ungulates find orchards and gardens very desirable places to feed.

The construction of B.C. Hydro's Hugh Keenleyside Dam had both negative and positive effects on the ungulates of the Deer Park area. The flooding of the low lying land served to eliminate a portion of their winter range habitat. On the other hand, B.C. Hydro's expropriations and flooding displaced many

of the farmers in the Deer Park area; the result of this was that much of the cultivated land was left idle and, thus, readily available as winter range habitat. However, B.C. Hydro is planning future developments on this old farmland which once again will remove it from the available winter range. Hydro has submitted a proposal to the Regional District outlining a plan to sub-divide approximately two hundred acres in the Broadwater area, approximately six hundred acres in the Deer Park townsite area, and approximately twenty acres along the lake near Cayuse Creek. (See Map #4.)

One public meeting has been held to discuss Hydro's proposal for the sub-division and another is to be held soon, presumably before a decision by the Regional District is handed down. Concerned citizens, many of whom are past or present landowners in the Deer Park area, and some resource agencies, including a representative of the B.C. Fish and Wildlife Branch in Nelson, were at the meeting. The general mood of the meeting was one of frustration and anger, especially amongst the past and present landowners who felt that this was just another instance of Hydro steamrolling over local people's wishes. The people present were also upset about not being given sufficient notice for what was to be the only public meeting to hear briefs and views on the proposal. During the meeting it was

strongly urged that a second public meeting be held to further discuss the proposed sub-division.

The representative from the Fish and Wildlife Branch who was present expressed concern not only about Hydro's proposal, but also about any other developments that might reduce the already diminished winter range habitat of the area. A major responsibility of the B.C. Fish and Wildlife Department is the management of habitat for the enhancement of wildlife. Realizing the effects of encroachment of settlements on wildlife ranges, the Fish and Wildlife Branch has stated that they will fight to the end to preserve Class 1 and 2 winter range. They are assisted somewhat in this respect by the existence of a Wildlife Reserve that covers a large tract of land, including the Deer Park area. (See Map #4.) A Wildlife Reserve is an area in which proposed developments must be reviewed by the Fish and Wildlife Department. This does not mean that they can dictate policy on these reserves, but that they do have the right to have an input into the planned development or activity.

Logging is another activity which could conflict with proper habitat management. At present, sites along Cayuse and Little Cayuse Creeks are the only logging areas in our study area. However, Hadikans, a local logging company, has applied to log north of the Deer Park townsite in the Deer Creek watershed. This area is also the source of water for Deer Park

(See Map #3.), so it is doubtful that they will be permitted to log here.

A large portion of our area is in Can-Cel's T.F.L. 23, Block 4 (See Map #3.). The cut blocks observed in Cayuse and Little Cayuse drainages are likely the result of Can-Cel's logging of this T.F.L.

Logging in these higher elevation areas does not normally enhance winter range, but regrowth on cut blocks can be a summer food source for ungulates.

In addition to the present and proposed land use activities mentioned above, the Deer Park area is also the site of two proposed ecological reserves. These reserves are to be located north of the town of Deer Park (See Map #4.) and encompass approximately seven thousand acres. The two areas were proposed as ecological reserves for two reasons: (a) they are a Douglas fir - Ponderosa pine forest type which is rare in the West Kootenays, and (b) the high capability of this forest type to provide suitable winter range for ungulate populations makes them very valuable. The establishment of these two areas as ecological reserves would guarantee that this land would remain in its natural state for study and research purposes.

A first glance at the Deer Park area reveals very little more than a small semi-isolated community with no apparent financial base. However, closer scrutiny reveals a community

that has in the past, is still, and likely will in the future be influenced by a number of opposing interests. Definitely, the least powerful of these interests is the wildlife population and yet, with the exception of the proposed ecological reserves, all of the interests in the area have the potential to reduce or destroy the wildlife habitat.

III. History of Deer Park

A. Pre-1900

Before the arrival of white men in the area, a small population of Indians, known as Lake Indians, made their home on the banks of the Lower Arrow Lake. Actual dwelling sites of old circular pits have been found along with Indian artifacts. At Deer Park, one resident found fourteen such dwellings, while many others were also found across the water on the Brooklyn side, signifying a year round community of Lake Indians. The Indians chose this area as a dwelling place because of its ideal climatic conditions, its ample supply of freshwater fish, and its large population of white tail (Odocoileus virginianus) and mule deer (Odocoileus hemionus).

These Indians were probably a splinter group that migrated up the Columbia River from the Colville area. They made extensive use of the Columbia River and Lower Arrow Lakes for transportation, for warfare, and for trade with the Shuswap and Okanagan Indians.

Explorer David Thompson canoed down the Columbia River in 1810 and recorded sightings of small groups of Indians scattered along the banks.

The first white men to ever make history at Deer Park

were Colonel E.S. Topping and the three Peterson brothers. They staked mining claims at Deer Park and Cayuse Creek in early 1896. Later on in that year they bought 1,800 acres from the C.P.R. at Deer Park for development of a new townsite. The C.P.R. labourers who were building the new railway line from Robson to Christina Lake had been located in the townsite of Brooklyn, on the south side of the Lower Arrow Lake. However, the large numbers of men needed to construct the line necessitated the establishment of another settlement. Thus, Deer Park was used as an overflow area in which men were housed and horses and cattle were pastured.

As well as the construction of the railway line, mining activities were carried on in the area. In fact, in 1897, gold was struck on the Rob Roy claim. Before this strike even occurred, there had been at least two hundred active claims in and around the Deer Park - Cayuse Creek area.

As Brooklyn boomed, Deer Park was able to reap all its benefits. In 1898, Colonel Topping and the Peterson brothers sold Deer Park to Governor Mackintosh who proposed to establish it as a permanent community. He also proposed to build a fenced "Deer Reserve" around a cottage.

One year later Brooklyn's boom ended as the C.P.R. construction crews moved their headquarters further on up the line. In that same year, Brooklyn was destroyed in a fire that

levelled it to the ground. Fortunately, by this time Deer Park had established its worth as an extremely good farming area with its rich, fertile soil, partial natural clearings, and adequate supply of water.

B. 1900 - 1970

By 1907, several families had established permanent residency in Deer Park. A school and church were built for this farming community which continued in a pattern of slow growth for some time.

In 1912, a group of Mennonite farmers settled in the area. However, it was not until the end of the First World War that Deer Park began to receive intensive interest from the outside world and activity in the area was greatly increased. The federal government turned its attention to the attractive and productive farming land of Deer Park as a potential resettlement area for returning soldiers. It was thought that the area could be developed for fruit production and small pasture areas. A private developer from Nelson who owned the majority of the land offered to sell to the government, and from that time on, the growth and activity of the Deer Park area increased.

From this time until the late 1950's, paddlesteamers were used for supplies, exporting of goods, and travel on the

Columbia River and Upper and Lower Arrow Lakes. These steamers travelled between Robson and Revelstoke, giving life to numerous small communities up and down the Arrow Lakes.

In the early 1960's, the United States began looking north for alternative sources of Hydro power and water storage along the Columbia River in the Kootenay region. Canada and the United States began working out a settlement in which a dam was to be built as a back up for water storage, power production and flood control for the United States. In 1964 the Columbia Treaty was ratified.

This treaty resulted in the planning and construction of the Hugh Keenleyside Dam between Robson and Deer Park. The completion of the dam meant that the water level was to be raised on the Upper and Lower Arrow Lakes. In order for this to be done, B.C. Hydro began expropriation of land from residents of the lakes. This involved moving actual houses by barge up the Lower Arrow Lake and the creation of New Fauquier, a new townsite for resettlement of the people. Some two thousand residents of the area were forced off their land and moved to new areas. Many old Indian camps and pioneer settlements were flooded when the dam began to store water in 1969.

In 1969, the Fish and Wildlife Branch showed its interest in the Deer Park area by establishing a Wildlife Reserve between Deer Park Mountain and Syringa Creek. (See Map #4.)

Interest in the area was due to the realization of the value that Deer Park had as an ungulate habitat.

C. Wapiti History and Distribution

At one time, wapiti ranged throughout central and western North America. As European settlers arrived on the continent and began pushing their way west, increasing pressure was put on the wapiti. Their habitat was taken for agricultural purposes and their herds dessimated for meat, trinkets and pleasure hunting. Eventually, only the western mountain ranges became their permanent range, until man, realizing the consequences of his actions, began introducing wapiti into new areas and re-introducing them to old ranges and habitats.

Before human pressure was applied on the wapiti, there were five species in existence. At present, there are only four remaining species; one is confined to Europe and three to North America, two of the latter being in British Columbia. The Roosevelt elk (Cervus elaphus roosevelti) have a range exclusive to Vancouver Island and the Olympic peninsula of Washington. Cervus elaphus manitobensis is a species restricted to Manitoba, Saskatchewan and eastern Alberta. The final and most abundant species in North America is the Cervus elaphus nelsoni. This species ranges throughout the

southwestern Rockies, the Selkirk mountains, northward as far as the Muskwa River and to a tributary of the Liard River in northeastern B.C.

During the late 1800's and early 1900's, the wapiti were shot for more than their meat. The canine teeth, unique to this species, were considered to be a treasure for fraternity trinkets. They were sold for seventy-five dollars a pair. The tines on the antlered wapiti were used for cutlery handles and sold for fifty cents a piece.

The present day wapiti are prized for their large antlers. To a smaller degree they are hunted for their meat.

IV. Rationale for and Effects of Transplant

A. Reasons

Since 1940, a Wapiti Reduction Program has been carried out by Parks Canada (Western Region) to reduce intraspecies and interspecies competition on available food and habitat (Flook 1970). This program has traditionally been carried out by slaughter of the animals. In 1969, Parks Canada wished to reduce the existing wapiti herds in Waterton, Banff, Jasper and Elk Island National Parks by approximately one thousand animals. An alternative to slaughter was to make the wapiti available for transplant to other areas.

In October, 1969 Parks Canada informed the Fish and Wildlife Branch of the B.C. Department of Recreation and Conservation that wapiti would be available for introduction or restocking of suitable areas. Local wildlife associations soon became aware of this and the Trail Fish and Wildlife Association made plans to apply for permits to introduce wapiti to the West Kootenays. They considered it poor management to kill the wapiti when the animals could be transplanted to serve hunting and observation purposes. Thus, the Trail Fish and Wildlife Association organized and financed the initial two releases into the Christina Lake region, while the Fish and

Wildlife Branch in Nelson financed and directed the subsequent Christina Lake and Deer Park transplants.

The Fish and Wildlife Branch was aware of the availability of the wapiti in 1969, although it seems that the Nelson Branch was very reluctant to become involved in the transplant program. It was originally felt that the transplant would require too much time, effort, and expense to be worthwhile. However, public pressure eventually became strong enough to force the Fish and Wildlife Branch to become involved in the financing and planning of subsequent transplants.

After the first wapiti transplant to Syringa Creek in the fall of 1971, public pressure to speed up the second transplant mounted. However, the Fish and Wildlife Branch was convinced that time was needed to assess the effects of the initial transplant. Thus, the second and third wapiti releases were not carried out by the Fish and Wildlife Branch until the winter of 1972-73.

In March, 1973, the Trail Fish and Wildlife Association made a request to the Fish and Wildlife Branch for yet another wapiti transplant to the Deer Park area as well as an initial transplant of Big Horn Sheep (Ovis canadensis) to the area. This was refused by the Fish and Wildlife Branch in Nelson on the grounds that more time was needed to evaluate the current transplants.

B. Effects of Transplant

Before it became evident that the transplanted wapiti would establish themselves successfully in the area, problems began to arise within the farming area of Robson. The problems seemed to stem from the fact that in 1972 there was a delay in receiving the second lot of wapiti destined to be transplanted to the Deer Park area. As the delay continued, local sportsmen became impatient and began to push for some action in obtaining the rest of the wapiti. The Fish and Wildlife Branch, in turn, pushed the Parks people who proceeded to trap the easily accessible wapiti around the Jasper townsite. These were "the roadside animal, the town and people orientated beasts". Such were the terms used by an employee of the Fish and Wildlife Branch to describe the wapiti that were involved in the transplant.

Although the animals were dropped north of Syringa Creek, they had lost their fear of man and consequently began to invade the orchards and gardens of the Robson area. July 15,1973 saw the Trail Conservation Officer receive the first of many complaint calls regarding the problems created by the wapiti in and around the community of Robson. (See Appendix A for the Trail Conservation Officer's log in regard to the problems, attempted solutions and time spent on the transplanted wapiti

between July 15, 1973 and May 1, 1974.)

In the hope that the Fish and Wildlife Branch could arrive at a popular solution to the increasing disturbances by wapiti, a quiestionnaire (See Appendix A for smaple and results.) was randomly circulated to households in the Robson area. From the results of the survey questionnaire, it was apparent that the residents were in favour of maintaining the wapiti population in the area. Thus, to protect the orchards and gardens of the community, a number of methods were used to discourage the wapiti from coming down to the farms. Some of the methods attempted were baiting, scaring or shooting the wapiti with rock salt. None of these methods were successful. Several animals were also shot by the Conservation Officer in the hopes that the blood smell might keep the remaining wapiti from venturing down again. This method met with partial success, but only temporarily.

Two public meetings were consequently held in the town of Robson by the Fish and Wildlife Branch in the spring of 1974. The purpose of these meetings was to air all complaints and solve the wapiti problem. A fence running from the ferry to the dam was proposed, discussed and agreed upon by the participants. However, the $50,000 projected cost seems to have dampened the enthusiasm for a fence to keep the wapiti out of the community because to date no fence has been constructed.

From September 7, 1974 to September 15, 1974 a special season was opened on the Robson wapiti in the hopes that this might reduce the more bold animals and discourage the others from coming near the community. Twenty animals were taken during this week.

In all, the Conservation Officers have destroyed approximately twenty wapiti in the Robson area, the last being shot February 8, 1976. With the special season in the fall of 1974, wapiti complaints greatly diminished and only a small number of sporadic complaint calls have come in since that time. It is felt that the increased pressure from the Conservation Officer and hunting has driven the wapiti away from the Robson area, some going toward the Deer Park area.

Because the wapiti seem firmly established, the Fish and Wildlife Branch is contemplating a limited entry, three point buck season in the fall of 1978.

V. Factors Considered in Our Study

A. Evaluation of This Transplant

The initial organization of this transplant was not good and the subsequent problems caused by the transplanted animals can be directly related to this fact. The Fish and Wildlife Branch showed poor judgment in the manner in which it became involved in the transplant. The Branch was initially reluctant to involve itself in the wapiti transplants in the West Kootenays. However, public pressure became so great that it was eventually forced prematurely into organization and implementation of the transplant. The Fish and Wildlife Branch ought not to have entered into the transplant program solely on the basis of public pressure. Had it decided to enter the program from the very beginning, it would have had the opportunity to develop a detailed organizational plan and to ensure that this plan was carried out. However, becoming involved in the midst of the program meant that the Branch had to deal with problems which arose because of poor initial planning, and ultimately had to assume responsibility for the consequences of this poor management.

The lack of sound planning in the initial stages of the transplant resulted in the fact that no comprehensive habitat

analysis was carried out prior to the release of the wapiti. Ideally, a preliminary cover and forage study, as well as an impact analysis, should have been completed in the Deer Park area.

One of the major causes of problems in the Deer Park transplants was poor selection of the animals for the second and third releases in the area. As stated previously, the delay in trapping the later shipments of wapiti resulted in public pressure on the Branch which again made it act too hastily. Branch representatives allowed this second shipment of animals to be captured too close to human habitations. Therefore, they received virtually tame wapiti. Because the wapiti had lost their fear of man, they did not hesitate to invade the farming community of Robson, causing numerous problems.

Had the second and third shipments of wapiti been released in Deer Park, as was originally intended, there might not have been a problem. The relative isolation of the Deer Park area from other communities would have meant that the wapiti were unlikely to invade heavily populated areas such as Robson. However, because of a number of factors, releasing at Deer Park was not done. The major obstacle was that the road to Deer Park was impassable due to inadequate bridging. One alternative considered was barging the wapiti to the release site. This

alternative was not implemented because it was felt that the stress and extra hours of travel inflicted on the wapiti would be too strenuous after their long confinement from Jasper National Park. Therefore, these wapiti, which already had little fear of man, were released in the Syringa Creek area close to the community of Robson. The result was a series of conflicts between residents of Robson and the wapiti.

B. A Comparison with Other Transplants

The available literature indicates that the major downfall in wildlife transplants is the failure to undertake a comprehensive habitat analysis study before introducing a species into an area. Some of the New Zealand transplants provide the most extreme and large scale examples of this failure. Howard (1964) sites a number of examples of indigenous New Zealand vegetation completely destroyed by exotic animals introduced before a habitat study was implemented.

Another study that outlines this failure is Olmstead (1977). He states that only after fifty years has Park management in Washington's Olympic National Park finally realized that a comprehensive ecological goat-plant management plan must be developed if transplanted Mountain Goats and alpine/subalpine vegetation communities are to survive.

Although there was no preliminary management plan drawn up for the Christina Lake transplant, this undertaking was fortunate enough to escape the conflicts that have arisen in the Syringa and Deer Park transplants. The wapiti trapped in the National Parks for release in the Christina Lake area had been back country animals, therefore, they were not so inclined to associate with man.

The release site of the Christina Lake transplant was also much superior to that of the Syringa transplant. The Christina release site was in a very isolated area, thereby making it less likely that the animals would establish their range near any settlements.

C. Specifics of Original Transplant

November, 1971
- 36 wapiti arrive by truck from Banff National Park:
  7 bulls
  17 cows
  12 calves
- released at Syringa Creek turn around

December, 1972
- 20 wapiti arrive by truck from Jasper National Park:
  4 bulls
  12 cows
  4 calves
- these animals were also released at the Syringa Creek turn around

January, 1973 - 20 wapiti arrive by truck from Jasper National Park:

3 bulls
16 cows
1 calf

(1 cow died in transit)
- these animals were also released at the Syringa Creek turn around

Approximately one half of the released animals were tagged.

D. Observations

1. Methods

In our study we attempted to gather information using as many methods as terrain and time permitted. Whenever possible during the 1977-78 school year, we travelled to the area to carry out our reconnaisance and inventories. This sometimes amounted to spending one day per week in the area, although commitments to other courses sometimes made this impossible. Because of poor road maintenance, it was also very difficult to travel the twenty kilometers to Deer Park, especially during or directly after a snowfall.

Most of our time spent in the study area was devoted to first hand, on the ground, visual observations which included continual search for live wapiti, tracks, pellets, bedding areas, and vegetation types. Sightings by the residents of the area were also noted provided there was no element of doubt in their sighting.

Dystric brunisols, developing toward podzols in the higher, wetter regions. These soils combine with other important factors to place this area in the IWH dry subzone biogeoclimatic zone, although there has been some disagreement over this classification.

The topography of the area has a high proportion of south to southwest facing slopes. In a vertical rise from the lake, one finds numerous kame terraces which result in varying sized benches interspersed throughout these slopes. The extensive bluff topography results in the ridges and rocky outcrops which are common throughout the area.

The moderating influence of the lake, and a high incidence of southern exposure both constitute edaphic climatic variants affecting the vegetation types in this IWH dry subzone. Because of these edaphic variants, there are PPBG plant communities on the steeper, drier southerly slopes and IDF plant communities on the slightly cooler, moister terraces.

It is well known that wapiti and other ungulates need a range vegetation that has a certain percentage food to cover ratio. A 60%-40% ratio respectively is generally accepted to be a good estimate of this food-cover requirement. It is sometimes difficult to measure this ratio accurately, therefore, it is usually assumed that open canopy-type vegetation in close proximity to a denser canopy-type vegetation will invariably

give rise to a favourable food-cover ratio.

The vegetation in the Deer Park area is classified as being in a seral state. This means that the canopy density is subject to extreme variations, thereby resulting in a wide variety and density of understory species (Warner 1974).

The low elevation slopes with a southerly aspect have predominantly open Ponderosa pine (Pinus ponderosa) stands with a wide variety of grass growing on the forest floor. The climax grass species found on these slopes include blue bunch wheat grass (Agropyron spicatum)and fescue (Festuca scabrella), while the overgrazed sites support Columbia needlegrass (Stipa columbiana) and Kentucky bluegrass (Poa pratensis). The higher elevation, dry, south facing slopes tend to have a more mixed canopy of Ponderosa pine and Douglas fir (Pseudotsuga menzeisii). These sites have substantial concentrations of red-stem ceanothus (Ceanothus sanguinius), Saskatoon berry (Amelanchier alnifolia), and mallow ninebark (Physocarpus malvaceus), which have long been established as preferred browse species of wapiti. The grasses and preferred browse species of these southern facing slopes provide an excellent supply of winter food for the wapiti of the area.

In a vertical rise from the lake, the benches throughout the area support varying densities and species of tree cover. The drier benches support predominantly Douglas fir stands,

while the wetter, cooler benches tend to support Western hemlock (Tsuga heterophylla). This constantly changing canopy cover results in a constantly changing shrub understory. The shrubs of these sites are predominantly low quality browse species such as ocean-spray (Holodiscus discolor) and soopolallie (Shepherdia canadensis), which are used very sparingly by wapiti and usually only in very hard years.

As a result of the past agricultural history of the Deer Park area, a very favourable situation for the wapiti has arisen. Because of the abandonment of much of the farming land in the area, the animals now have a large supply of easily accessible food available to them virtually year round. Previously cultivated areas have high concentrations of alfalfa (Medicago sitiva), sweet white clover (Melitotus officinales), and domestic grasses which are all very nutritious and very high in protein (especially the alfalfa and clover). Although the fruit trees of the area's abandoned orchards are very old and over-mature, the buds do provide some browsing food, especially in the winter.

Because of the growing conditions on north or east facing slopes, these sites support different plant communities than the south or west facing slopes and most of the bench sites. These cooler slopes in the Deer Park area support predominantly IWH plant communities, thereby reflecting the broader

biogeoclimatic classification of the region. This timber type generally results in heavily timbered sites with closed canopies. Therefore, shrub species are very restricted in variety and density. As a food source for the wapiti, these shrubs are normally very poor nutritionally and very low in protein content. Due to the heavy timber and minimal openings on these slopes, wapiti generally find this terrain unfavourable, especially in the winter months when snow depth is greater than on the south facing slopes.

4. Vegetation Preferences

The flora of the locality where wapiti feed seems to have an important bearing on food preference. Dr. Olaus Murie, an authority on wapiti, stated in 1951 that "grass is the preferred food throughout the year where grasses and grass-like plants were available". However, Vernon Young, in 1931, stated that on the Selway Game Preserve of Idaho "the elk show a decided preference for browse throughout most of the summer and this is not because desirable grasses are not available". A review of the literature reveals that certain plants appear to be more palatable to wapiti than others, but Dr. O. Murie, is his book entitled The Elk of North America, states that nearly three hundred different plant species have been identified in the stomach contents of wapiti.

Feeding preference, especially in winter, may also be

related to the individual plant's growth cycle. Eyres, Elion and Hopkins in their 1975 study noted that wapiti most often browsed ninebark shrubs in the fall and up to early December. However, by mid-January, their diet preference altered and they turned to ceanothus.

It becomes evident that it is impossible to make an accurate blanket statement concerning the food preferences of wapiti. Specific statements can only be made after careful study and should be limited to the particular herd of wapiti being studied.

5. Specific Findings

In the fall of 1977, during the initial stages of our field trips to Deer Park, we encountered what we later discovered to be Casey's fields or Phelp's ranch, as it is sometimes called. (See Map #5.) This area is located on a fairly large bench above the Deer Park townsite. These fields are still harvested, as they contain a closely cropped mixture of alfalfa, sweet white clover, and some domestic grasses. As we crossed and re-crossed these fields, we observed that large quantities of fresh and old wapiti pellets almost blanketed the ground. It was apparent that wapiti used the forage in these fields quite extensively.

Continued observations of the area revealed utilization by the wapiti well into the winter. Numerous sites were

observed where the wapiti had pawed through the snow to obtain the forage. It was not until mid-December, when the snow exceeded two feet in depth, that we were no longer able to discover signs of wapiti foraging in the fields. Up to this time, these fields had the heaviest concentration of tracks found throughout our study area. Tracks were also noted through the entire winter around the preferred browse species, especially Ceanothus sanguineus, Amelanchier alnifolia, Physocarpus malvaceus, and Rosa spp. (See Map #5) for areas of high concentration.) It appears that the wapiti graze and browse in the winter when both types of forage are available, but move to strictly browse when the snow is too deep to push away.

Through our observations of the study area we found many areas that could provide excellent bedding sites for wapiti. These areas were dense enough to provide sufficient cover and yet open enough to allow for a quick escape. (See Map #6.)

Two specific mineral licks were also noted in our area. (See Map #6.) These licks appeared where roads had been cut through very fine lacustrine sediments. Mineral licks are often high in phosphorus and calcium, which the wapiti need and do not seem to be able to obtain through foraging.

In our field trips from early January on, only solitary sets of tracks were observed throughout our entire study area.

Because of the lack of abundant wapiti signs we felt that aerial reconnaissance would help us to locate the herd. We subsequently flew over the area on two separate occasions, March 22 and April 1, for a total of 2.6 hours in a Cessna 172. These flights provided us with a more comprehensive understanding of the topography and a more complete picture of the vegetation cover. However, we were again frustrated in our attempts to locate the wapiti.

To help in the estimation of population numbers, the establishment of pellet plots was considered. However, from past experience we did not feel confident in the application or with the results of this method of population estimation.

VI. Evaluation of Findings and Conclusions

Unfortunately, despite all the time and effort spent in the study area, we did not get the opportunity to observe even one wapiti, although we found ample signs and heard solid testimony that there were wapiti in the area. We feel this failure can largely be attributed to our inexperience and lack of knowledge of wapiti movement. In spite of this drawback, we did gather pertinent information related to other facets of the study area.

The data we collected shows quite clearly that there is adequate habitat for wintering wapiti. However, close scrutiny of the vegetation of the area reveals that a habitat management plan is needed in the near future if the Deer Park area is to remain prime winter range for the wapiti.

By far the most critical need of this range area is a comprehensive prescribed burning program. Observations of the preferred browse species reveal that they are becoming old and over-mature and, therefore, that the nutritional value of the shrubs is rapidly deteriorating. Local knowledge and site indicators reveal that fire has been excluded from this area for at least eighty years. The forest cover type for the prime habitat areas is Ponderosa pine and Douglas fir.

Experts feel that, on an average, Ponderosa pine would

naturally burn at least every seven to twelve years, while Douglas fir would naturally burn at least every thirty years, give or take ten years. This means that to maintain the plants' vigor and release tied up nutrients back into the ecosystem, these sites should be burned in a controlled situation at least as often as would occur naturally.

Another factor resulting from total continuous fire suppression,which could be rectified by proper fire management, is the large accumulation of fine, medium, and heavy fuels throughout the area. These accumulated fuels, if ever ignited in an uncontrolled situation, have the potential to destroy not only the overstory, but also the understory and very possibly even the organic layer of soil. This would render the area unproductive for a number of years.

Another factor to be considered in this habitat management plan is the arrest of the encroachment of forest vegetation types onto the cultivated fields. This is necessary if these areas are to be maintained as a valuable source of food for the wapiti.

As pointed out earlier in this report, the Deer Park area is the scene of a number of conflicting land use proposals and activities. The strongest recommendation we can make in this regard is to maintain this area as prime ungulate wintering habitat. We strongly urge that any land use proposal take

into careful consideration the intrinsic value of these rapidly decreasing wildlife wintering areas.

VII. Recommendation for Further Study

From the information we have gathered, it seems that the wapiti are concentrated in the area south of Ladybird Mountain. Therefore, we feel that a study of this area would be more successful in assessing the health and abundance of at least one herd of transplanted wapiti.

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APPENDIX A

C.O.'s Log

July 15, 1973	- first elk complaint of elk near Selkirk College
August 2, 1973	- tried to remove elk from Selkirk with tranquilizer gun, spent night, no success
August 22, 1973	- destroyed two elk at Selkirk, one cow and her female calf
October 18, 1973	- first elk complaint from the Robson area
October 30, 1973	- went to Colville to pick up drug to use on elk
October 31, 1973	- removed one bull elk from Robson to Vets place at Tagum
November 1 & 2, 1973	- tried to remove another elk (bull) from Robson but animal went down in area where it could not be loaded on truck
November 5, 1973	- received another elk complaint from the Robson area
November 10, 1973	- tried to remove bad cow from elk herd at Robson, no success
December 2, 1973	- tried to remove elk from Robson by shooting near them, no success
December 3, 1973	- destroyed first elk at Robson to try and discourage animals from orchards (bull)
December 9, 1973	- received another complaint from Robson
December 11, 1973	- destroyed second elk at Robson (cow)

December 20, 1973	- went on holidays until January 10, 1974
February 5, 1974	- destroyed two elk at Robson (two bulls)
February 6, 1974	- started to put out hay for elk, no results
February 9, 1974	- put out more hay for elk, some deer and one or two elk are eating hay, very poor results
February 10 & 13, 1974	- put out more hay
February 21, 1974	- flew the Robson area by chopper, saw several head of elk, six bulls in one herd
March 5, 1974	- destroyed two elk at Robson (one bull, one cow)
March 6, 1974	- destroyed one elk at Robson (one cow)
March 10, 1974	- tried to herd elk with people on horse back and foot, no success
March 11, 1974	- held meeting in Robson concerning elk problem (see meeting minutes)
March 15, 1974	- destroyed two elk at Robson (one calf, one cow)
March 14, 1974	- routine elk check, destroyed two elk (two cows)
March 22, 1974	- had meeting with Jack Bone concerning elk problem and the fence project
March 28, 1974	- meet with Ross Oborne and others concerning elk fence
April 1, 1974	- to Robson on elk complaint, destroyed one elk (one cow)
April 3, 1974	- destroyed two elk at Robson (two cows)

April 5, 1974	- to Cranbrook to discuss fence project with D. Phelps
April 8, 1974	- discussed elk problem with Mr. March of B.C. Hydro
April 18, 1974	- experimented with tranquilizer on elk, put down one cow which died due to choking
April 24, 1974	- further experimenting with tranquilizer and elk at Robson
April 30, 1974	- first elk complaint since April 3, 1974

DEPARTMENT OF RECREATION AND CONSERVATION

FISH AND WILDLIFE BRANCH

ROBSON ELK SURVEY

Introduction

Recent problems have developed in the Robson area with the transplanting of some 75 elk from the Jasper herds. Crop loss and fruit tree damage are the major complaints. This survey was done to find out how the people in Robson feel about the elk being there.

Method

The Robson area was canvassed by Tim Rutherglen and myself randomly picking houses from the ferry dock up to the dam.

The question form was laid out as follows:

1. Male .... Female ....
   Do you hunt? yes .... no ....
2. Do you feel elk are beneficial to the area? yes .... no ....
3. Do you want to maintain the elk population? yes .... no ....
4. Would you be in favour of a well regulated elk season? yes .... no ....
5. Do you have any suggestions?

We asked the above questions and then took any comments the residents had to make.

Results

The following results to the questions were obtained.

1. Male 65% Female 35%

   Do you hunt? yes 25.6% no 74.4%

2. Do you feel the elk are benificial to the area?
   yes 91% no 9%

3. Do you want to maintain the elk population?
   yes 86% no 14%

4. Would you be in favour of a well regulated elk season?
   yes 53% no 47%

5. Do you have any suggestions?

- shoot the animals	2%
- leave them alone	12%
- shoot the problem animals	7%
- trap out all animals	12%
- farmers put up there own fences	2%
- undecided	65%

APPENDIX B

List of Shrub Species

- these plants are the shrubs that are the most common throughout our study area

Pachistima myrsinites (Falsebox)
* Philadelphus lewisii (Mock orange)
Corylus cornuta (Hazel)
Alnus tenuifolia (Alder)
* Ceanothus sanguineus (Red stem ceanothus)
Arctostaphylus uva-ursi (Kinnikinik)
* Physocarpus malvaceus (Mallow ninebark)
Beriberis spp. (Oregon grape)
Sheperdia canadensis (Soopalalie)
Salix spp. (Willow)
Holodiscus discolor (Ocean spray)
Spirea lucida (Spirea)
* Rosa spp. (Rose)
* Acer glabrum (Douglas maple)
* Amelanchier alnifolia (Saskatoon berry)

* O.J.Murie indicates that analysis of wapiti stomach contents reveals these plants to be acceptable in varying degree

APPENDIX C

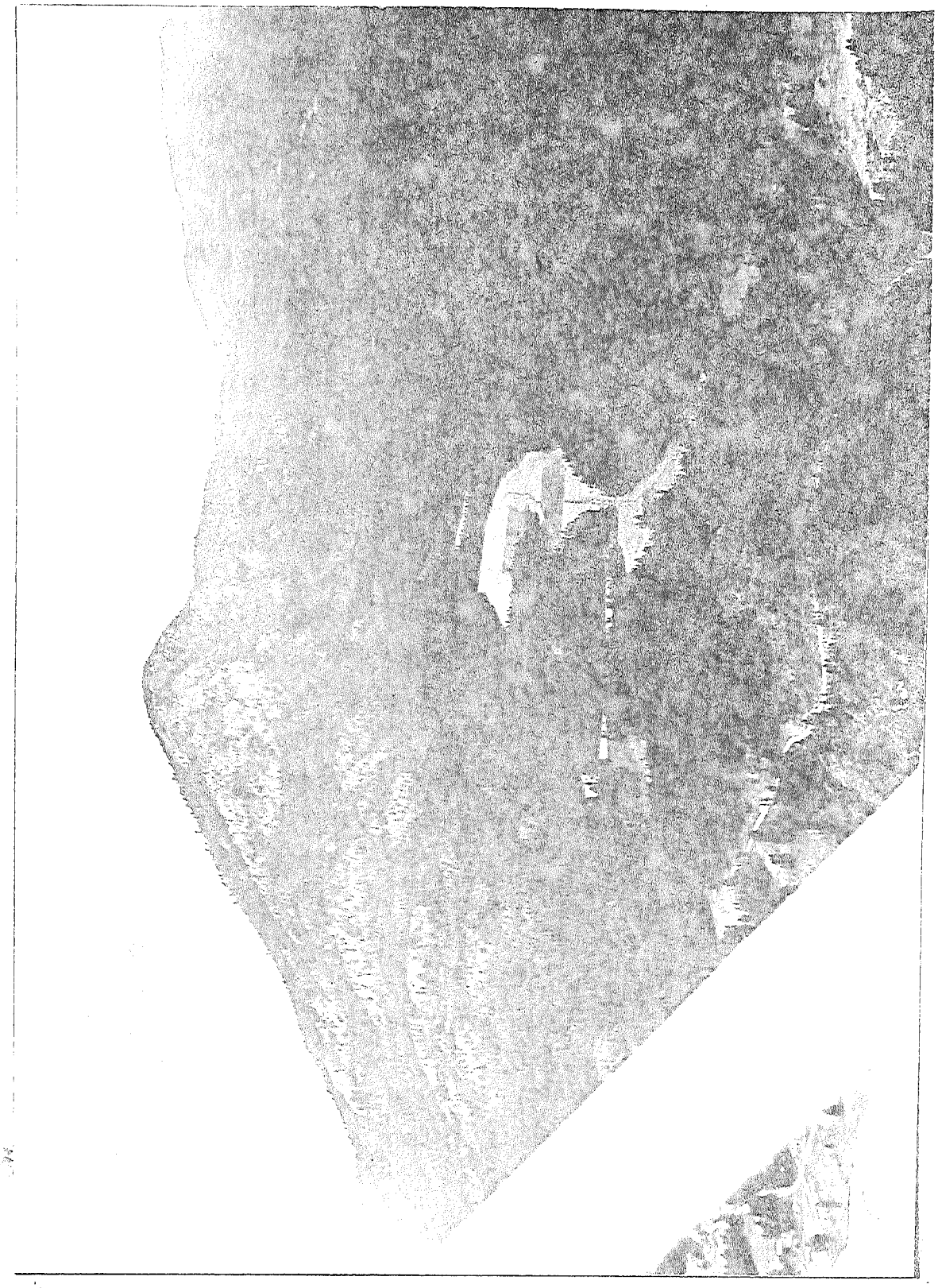


Fig. 1 - Deer Park area looking north

Fig. 2 - Casey's Fields looking north

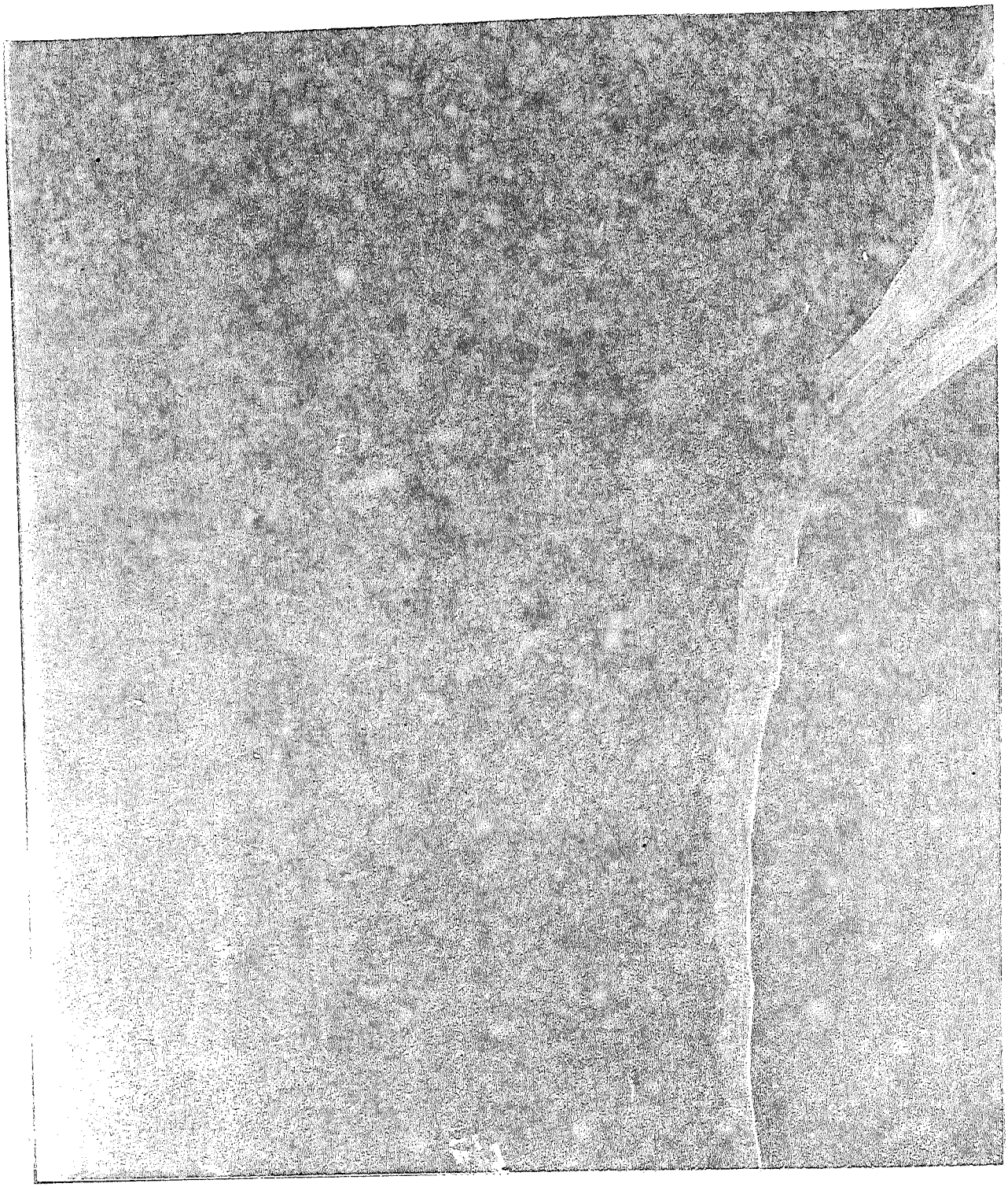


Fig. 3 - area around the mouth of Little Cayuse Creek

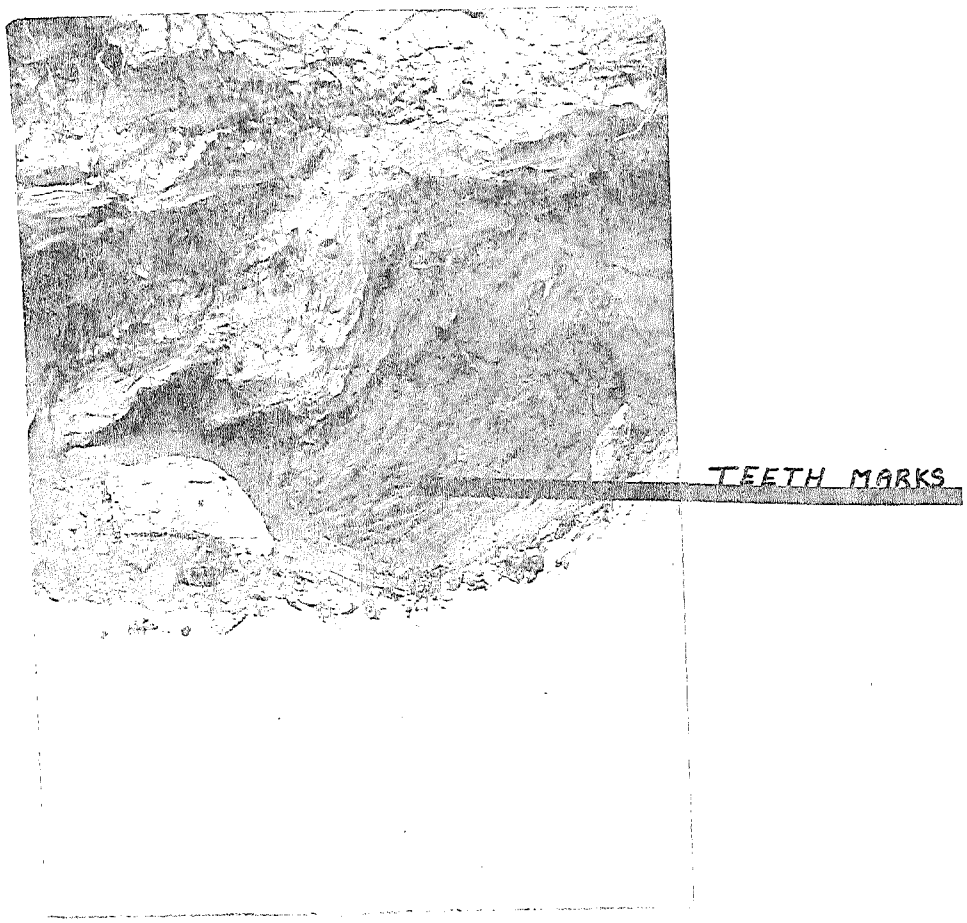
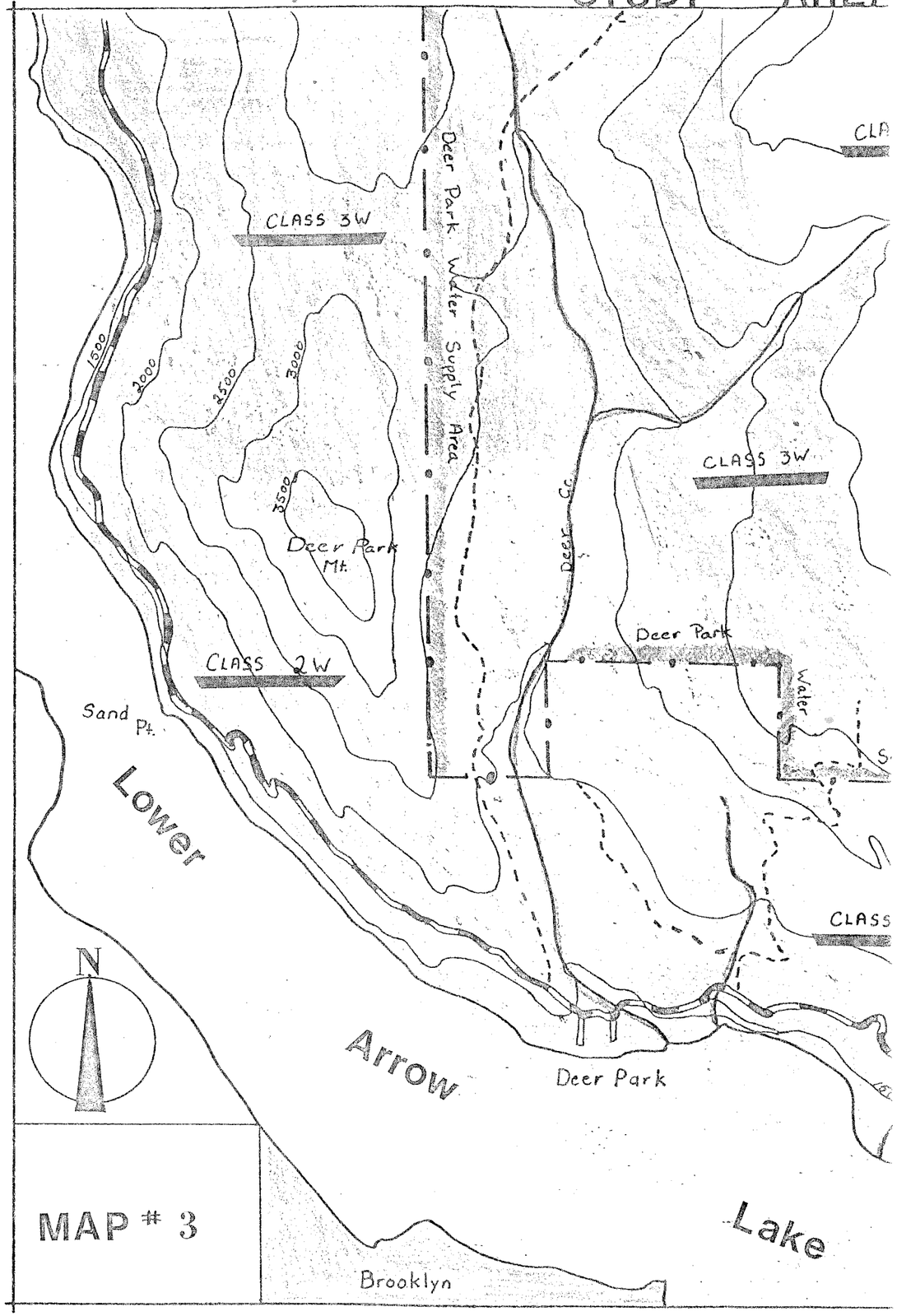
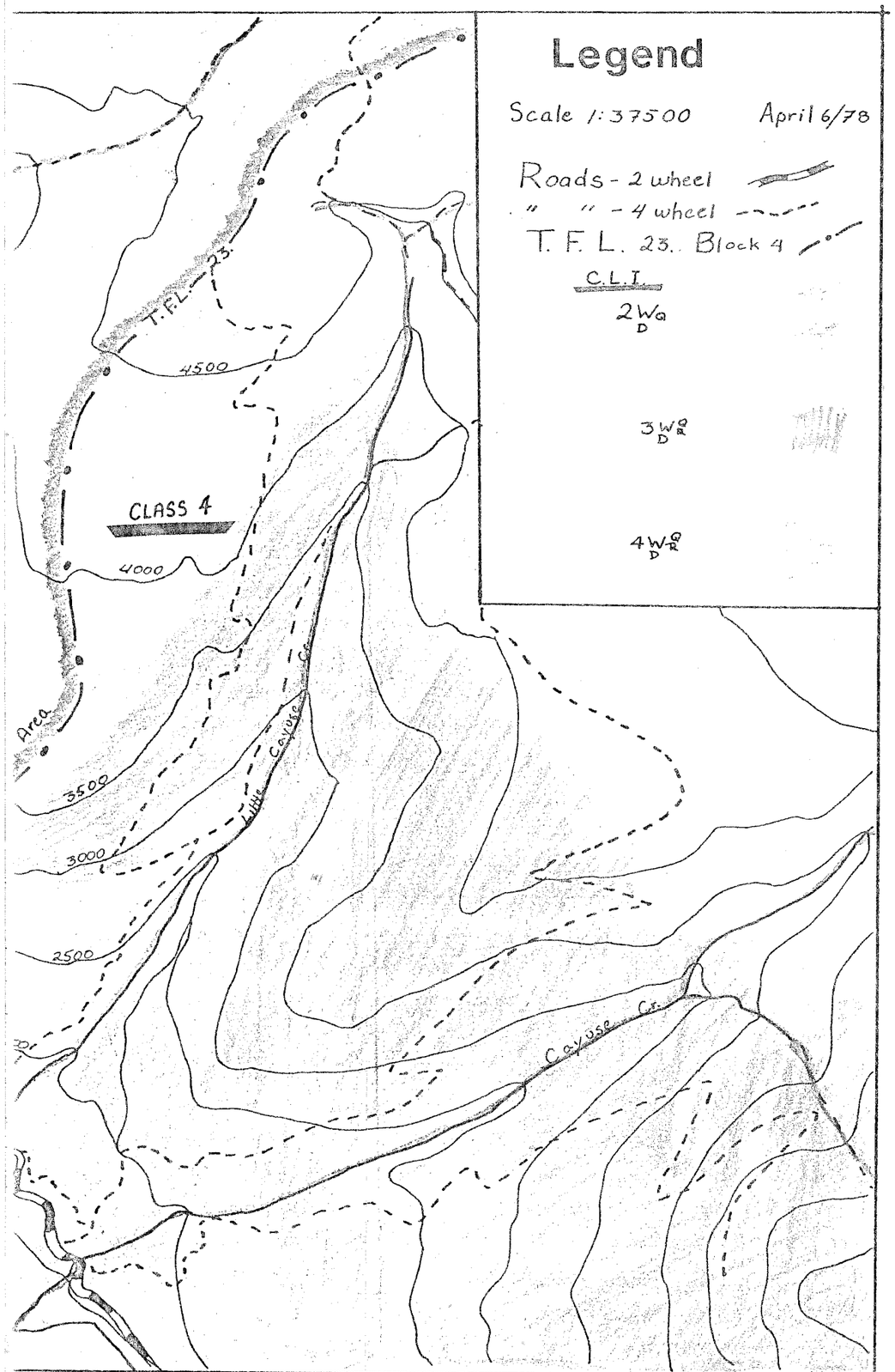


Fig. 4 - mineral lick near Deer Park Mt.

MAP #3

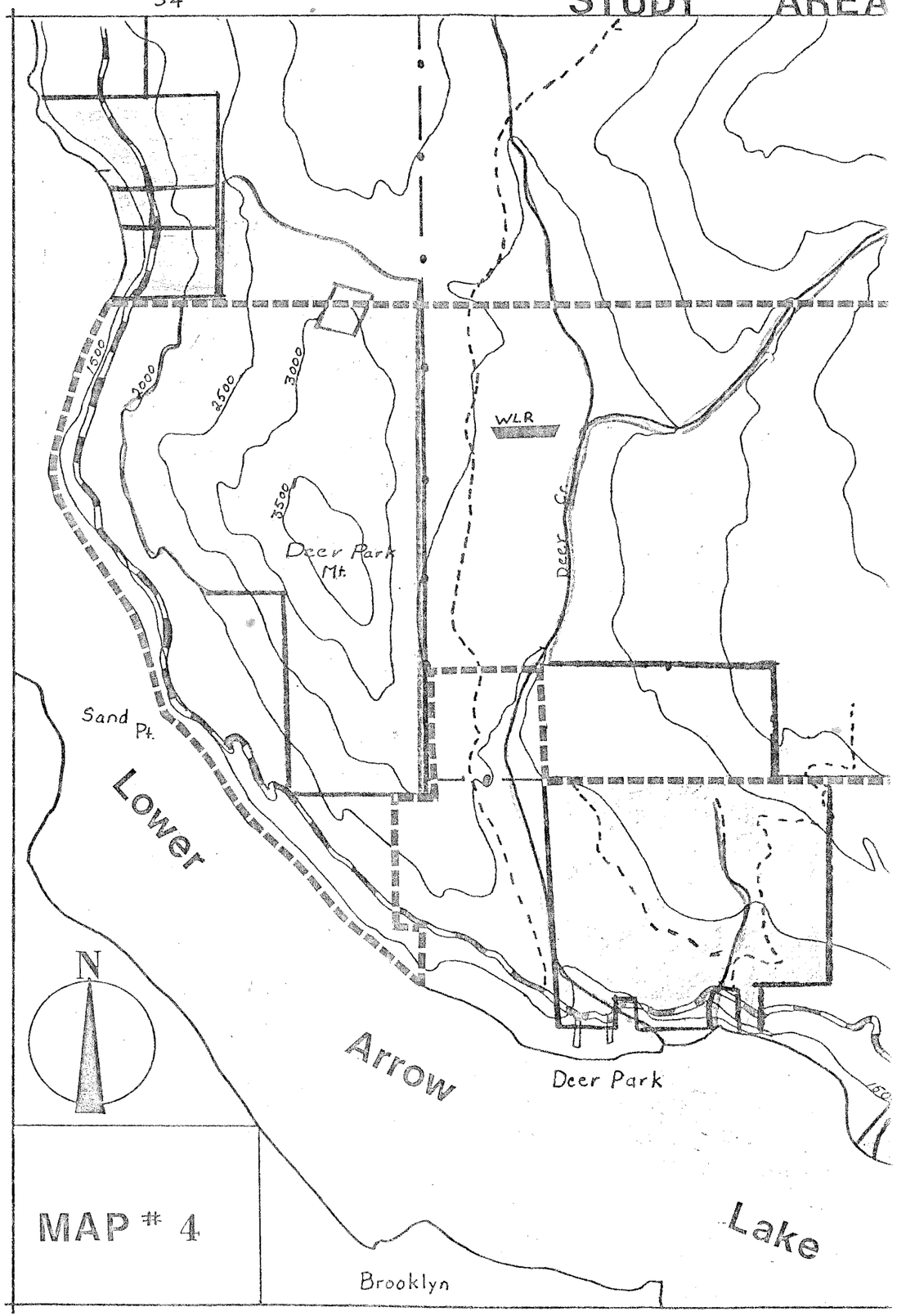
STUDY AREA


Deer Park Water Supply Area
CLASS 3W
CLASS 3W
CLASS 2W
CLASS
1500
2000
2500
3000
3500
Deer Park Mt.
Deer Cr.
Deer Park
Sand Pt.
Lower
Arrow
Lake
Deer Park
Brooklyn
N
MAP # 3

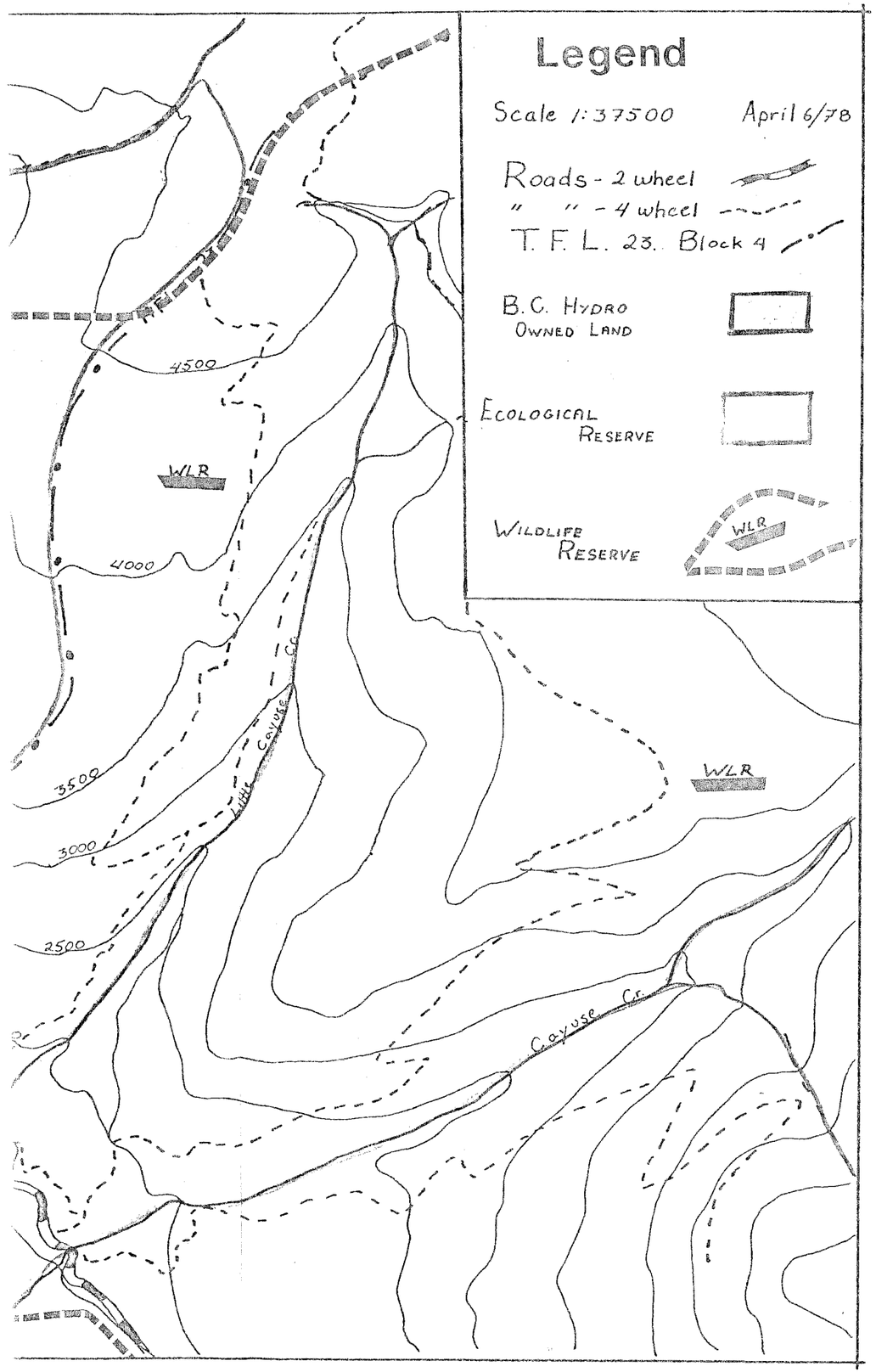

T.F.L. 23.
4500
CLASS 4
4000
3500
3000
2500
Coyote Cr.
Coyote Cr.
Area
Legend
Scale 1:37500
April 6/78
Roads - 2 wheel
" " - 4 wheel
T. F. L. 23. Block 4
C.L.I.
2W
D
3W
D R
4W
D R

MAP #4

STUDY AREA

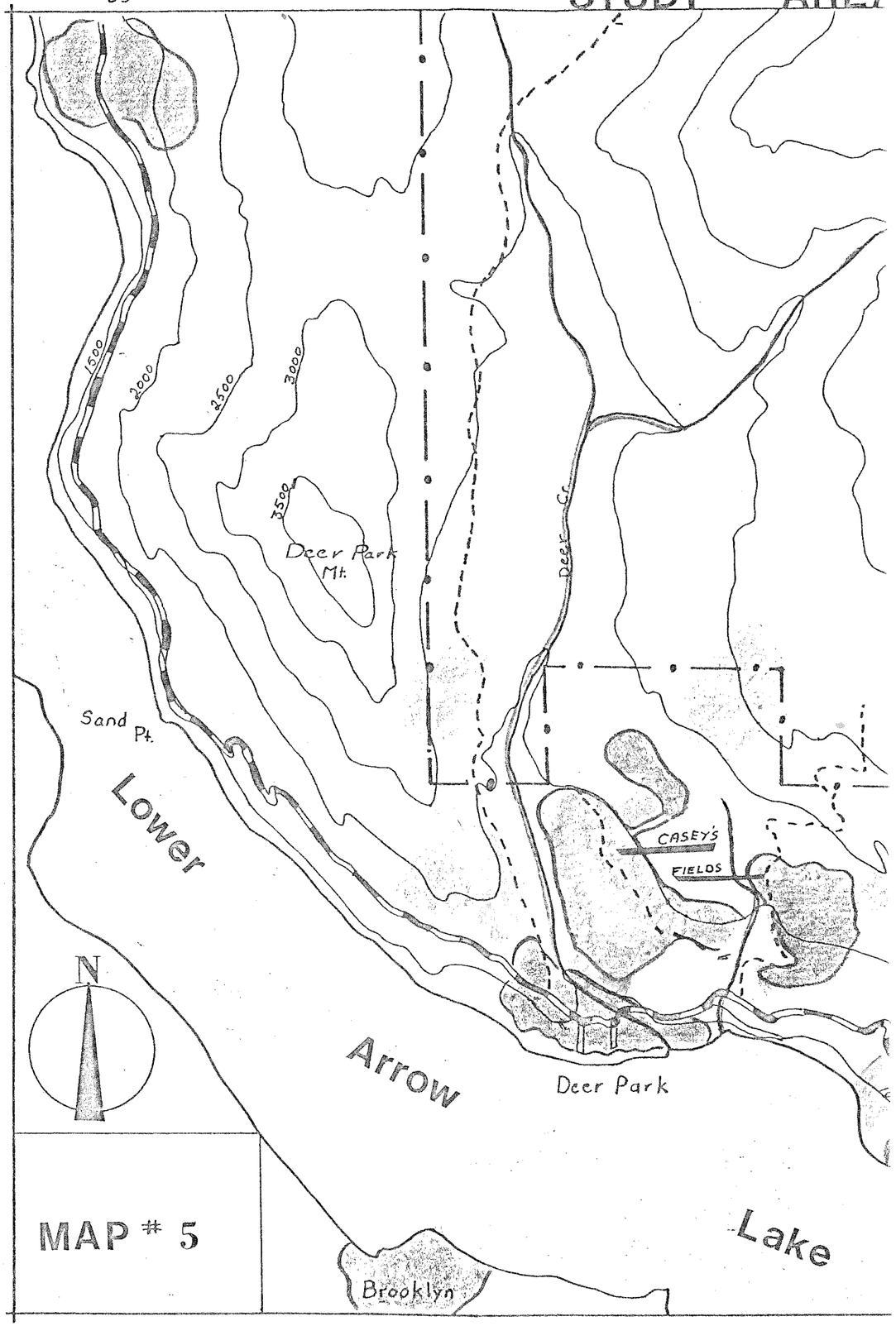


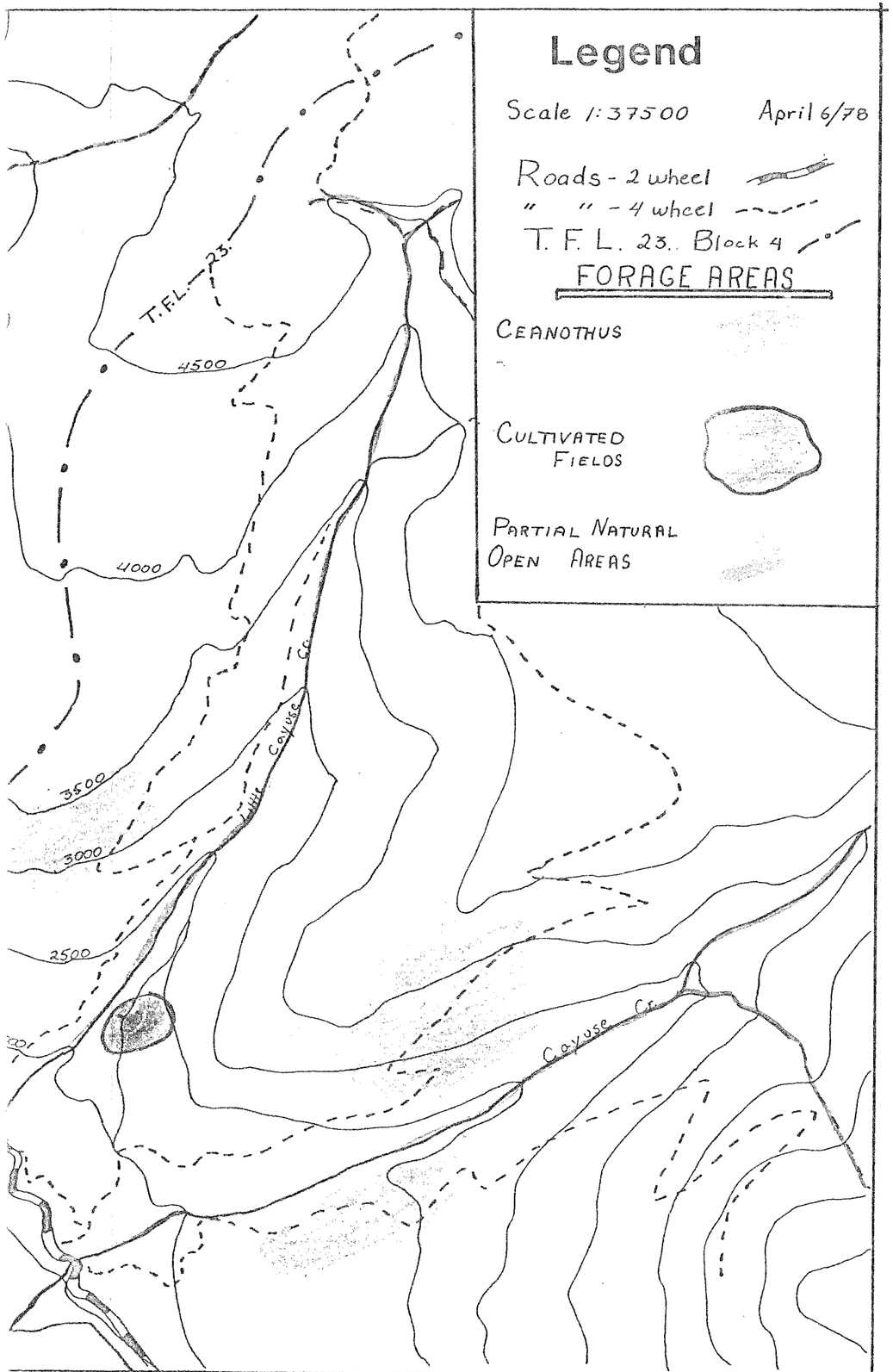
MAP # 4



MAP #5

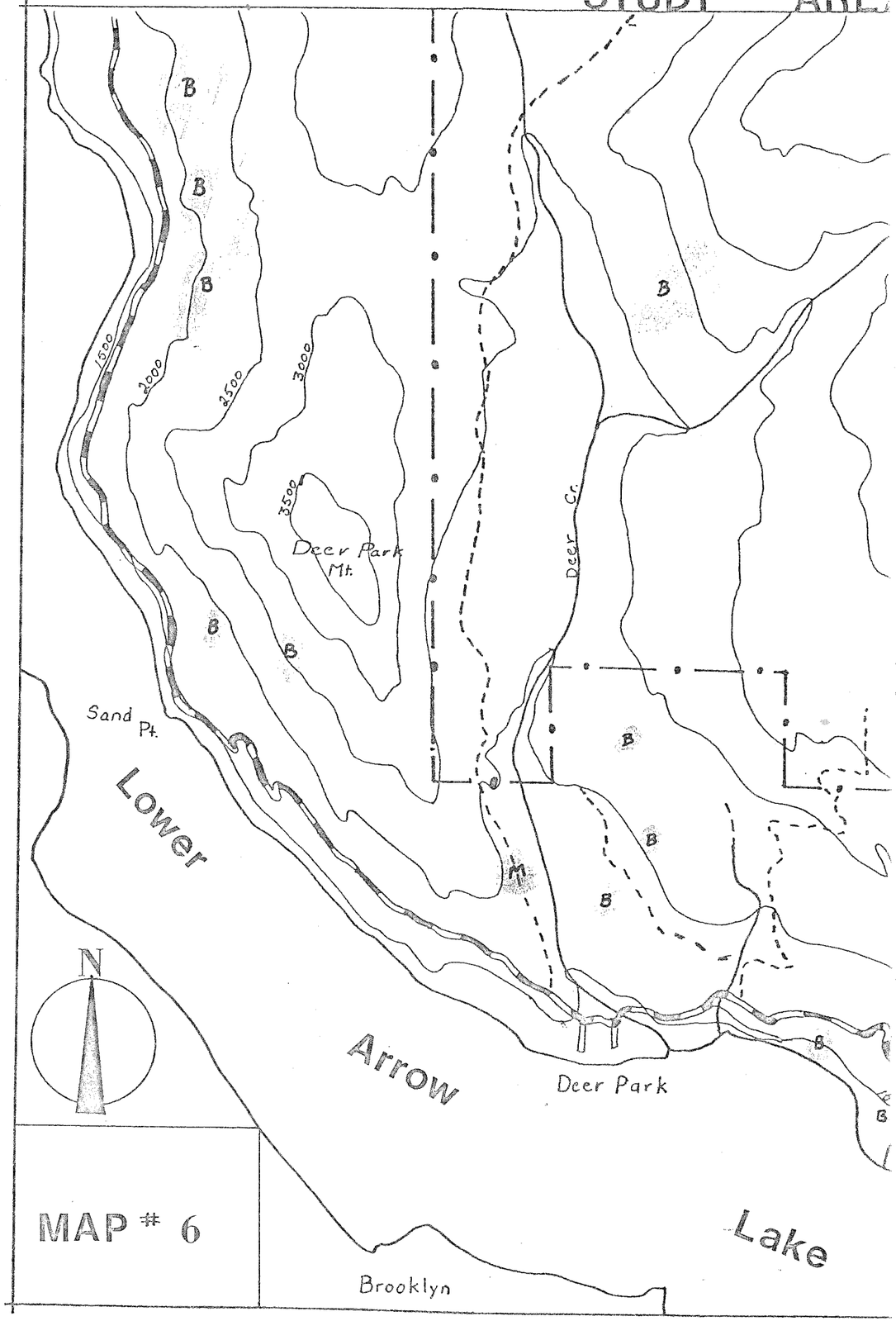
STUDY AREA

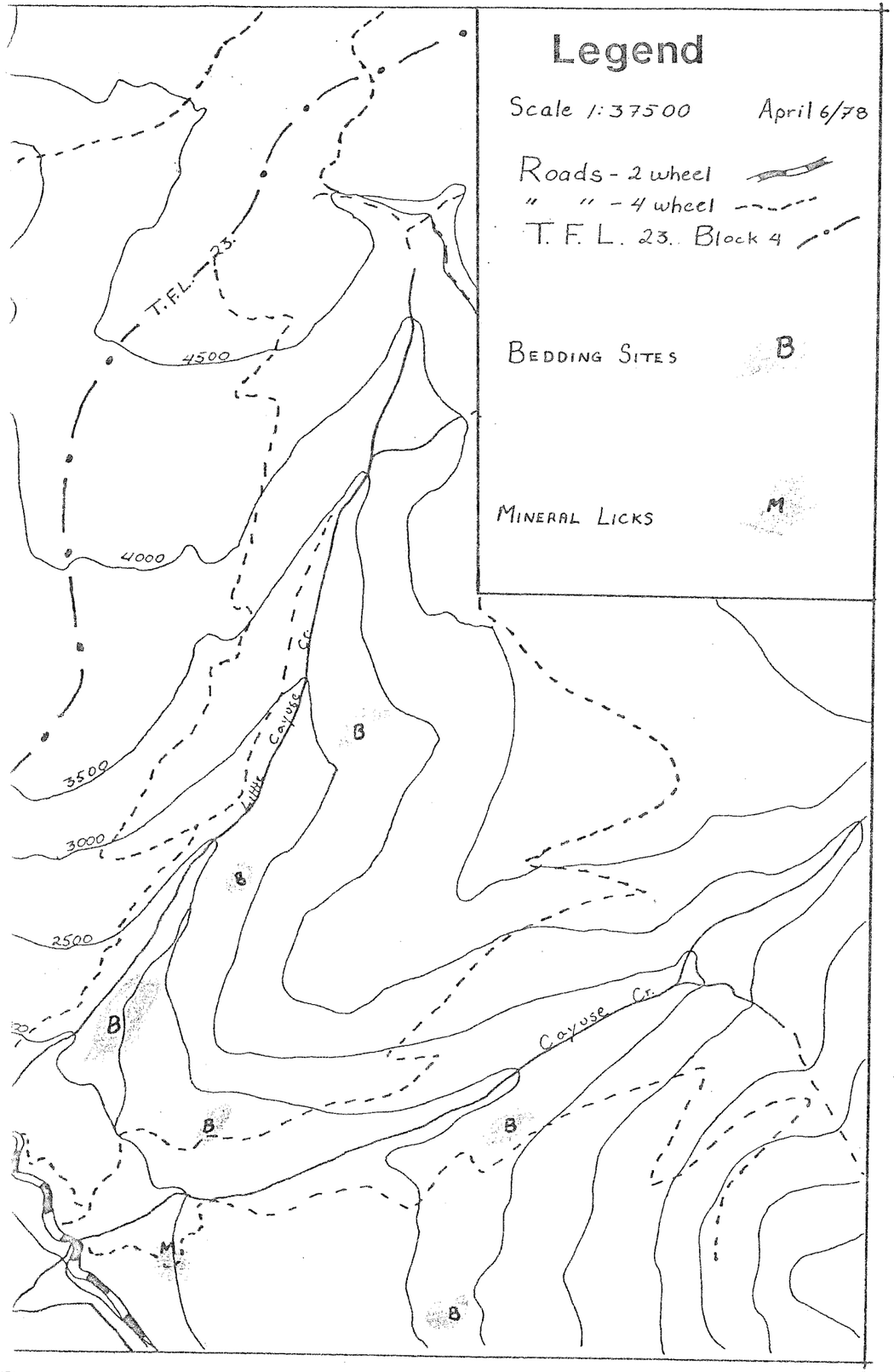

1500
2000
2500
3000
3500
Deer Park Mt.
Deer Cr.
Sand Pt.
Lower
CASEY'S FIELDS
N
Arrow
Deer Park
Lake
Brooklyn
MAP # 5


T.F.L. 23.
4500
4000
3500
3000
2500
Coyuse Cr.
Legend
Scale 1:37500
April 6/78
Roads - 2 wheel
" " - 4 wheel
T. F. L. 23. Block 4
FORAGE AREAS
CEANOTHUS
CULTIVATED FIELDS
PARTIAL NATURAL OPEN AREAS

MAP #6

STUDY AREA





Legend

Scale 1:37500 April 6/78

Roads - 2 wheel

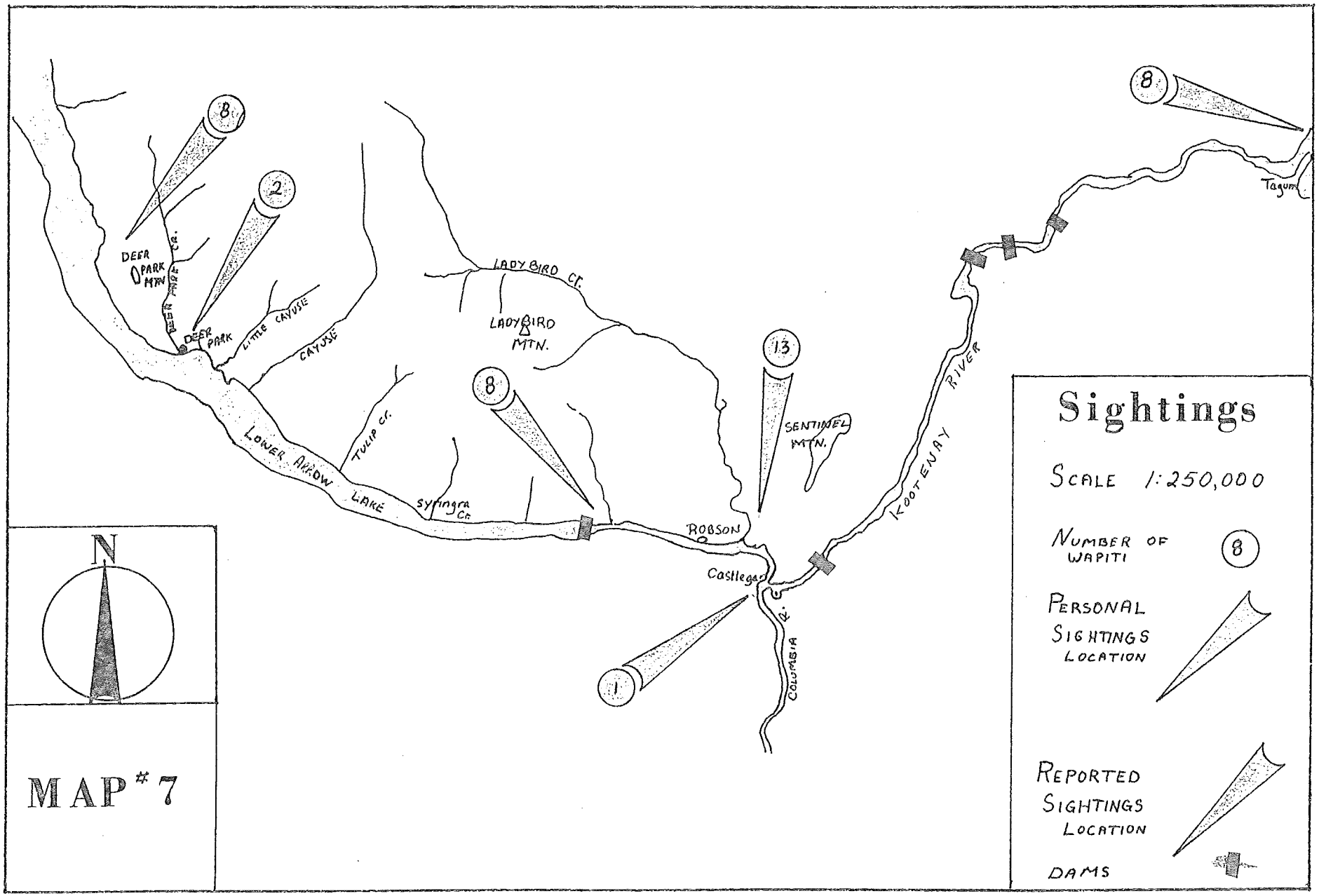
" " - 4 wheel

T. F. L. 23. Block 4

BEDDING SITES B

MINERAL LICKS M

MAP #7


8
2
DEER PARK MTN
DEER PARK CR.
DEER PARK
LITTLE CAYUSE
CAYUSE
LADY BIRD CR.
LADY BIRD MTN.
8
13
TULIP CR.
LOWER ARROW LAKE
SYRINGA CR.
SENTINEL MTN.
ROBSON
KOOTENAY RIVER
8
Tagum
Castlegar
1
COLUMBIA
N
MAP # 7
Sightings
SCALE 1:250,000
NUMBER OF WAPITI
8
PERSONAL SIGHTINGS LOCATION
REPORTED SIGHTINGS LOCATION
DAMS