

**EXPANDED ECOSYSTEM LEGEND
EAST COLUMBIA LAKE STUDY AREA**

I. Legend to Ecosystem Units

for:

Larry Ingham
Columbia Basin Fish and
Wildlife Compensation Program
Invermere, B.C.

by:

Derek Marcoux BSc. RPBio.
Maureen V. Ketcheson MSc. RPBio.
Deepa Spaeth BSc GIT
Gareth Kernaghan For. Tech.
Bruce Sinclair BSc.

JMJ HOLDINGS INC.
208-507 Baker Street
Nelson, B.C.
V1L 4J2

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1.0 INTRODUCTION

Columbia Basin Fish and Wildlife Compensation Program issued a request for proposals to complete 1:20,000 *Terrestrial Ecosystem Mapping* in the East Columbia Lake Study area. **JMJ Holdings Inc.** was awarded the contract to complete the mapping with wildlife interperations and a management treatment overlay. Enns (1993) undertook a biophysical study of this same area.

1.1 LOCATION

The study area is located on the east shores of Columbia Lake between Canal Flats and Fairmont Hot Springs in the East Kootenay Region of British Columbia (Figure 1). The study area is bordered on the west by Columbia Lake and on the east by the height of land that comprises the ridgeline of Mount Fairmont. The southern boundary is adjacent to private land that borders the Kootenay River. The study area is approximately 7500 hectares in area and is situated on portions of the following 1:20,000 T.R.I.M. map sheets:

82J.011
82J.012
82J.021
82J.022
82J.031
82J.032

1.2 GEOLOGY AND GLACIAL HISTORY

The study area lies on eastern flank of the Rocky Mountains which, in this vicinity, is the western slope of the Stanford Range, part of the Kootenay Ranges of the Rocky Mountains (Holland, 1994). The topography varies from rugged, mountainous terrain in the northeastern part of the study area (in the vicinity of Fairmont Mountain) to the moderately sloping hills in the south. Along the western edge of the area, gentle slopes and low lying benchlands adjoin Columbia Lake. Elevations range from 810m (2655ft) at Columbia Lake to 2640m (8650ft) at the summit of Fairmont Mountain, a 1830m range of relief.

Bedrock geology was mapped by Henderson (1954). The Stanford range is made up of ancient sedimentary rocks of Ordivician and Pre-Cambrian age. Massive carbonates ie. limestone and dolomite predominate, but argillite, quartzite, sandstone, shale and conglomerates are also common. Carbonates are of ecological importance because they resist weathering and erosion and, thus tend to form cliffs, and they contribute to the development of alkaline soils.

During the Cretaceous and Tertiary period, a mountain building episode (the Laramide Orogeny) resulted in folding, faulting and uplifting of the sedimentary rocks, creating the

Rocky Mountain Trench and the Rocky Mountains. At the scale of this study area,

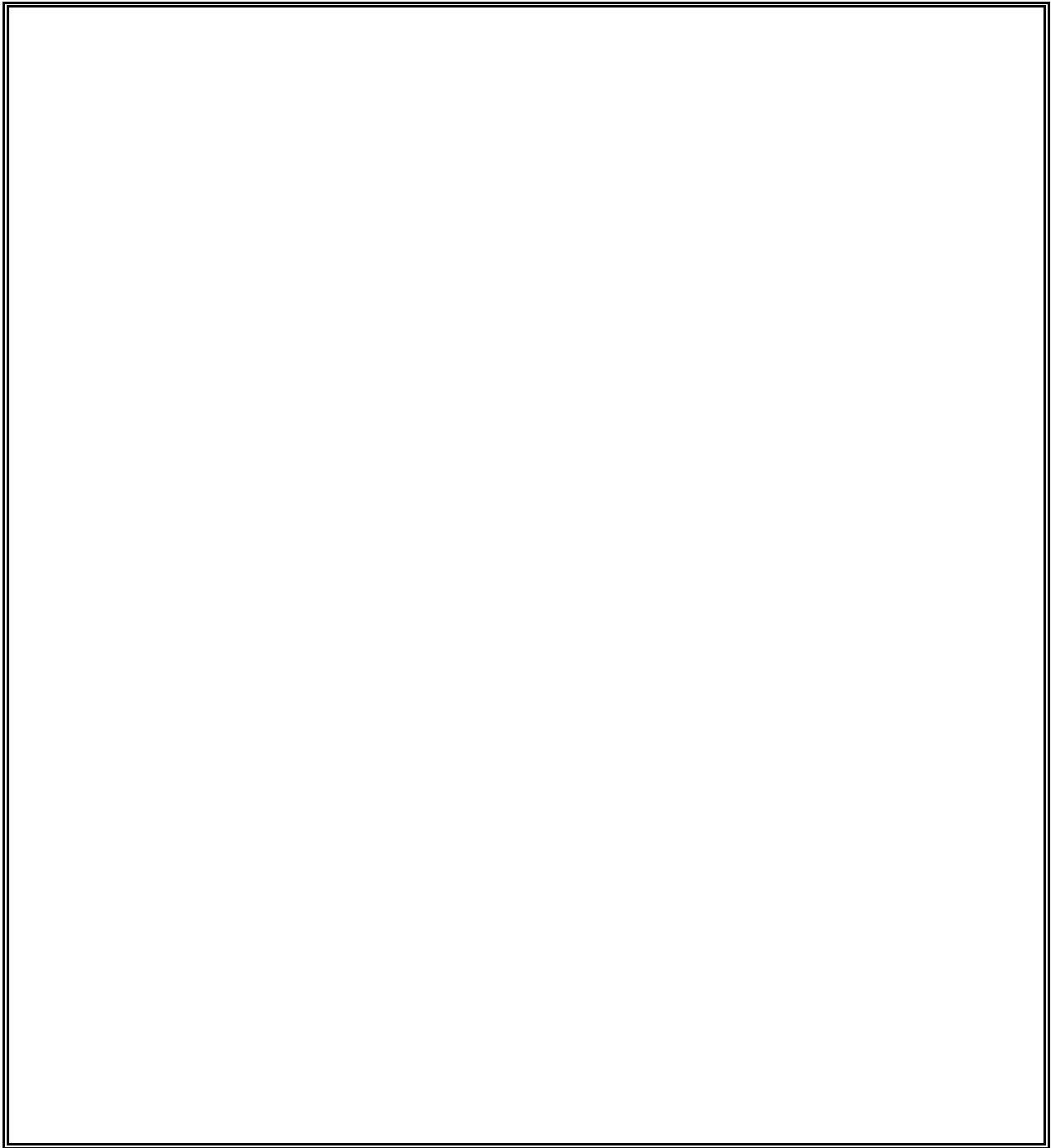


Figure 1. Study Area Location

these tectonic forces created an east-west trending system of thrust faults. Huge thrust blocks were shoved upward toward the south, with each block overriding the one in the front. This resulted in north-dipping strata, and predominantly south-facing scarps of the carbonate rock. South aspects are thus dominated by cliffs and talus and are relatively xeric, while other aspects are less steep. This situation is unusual as many mountainous landscapes have dominantly north-facing cliffs due to glacial erosion.

More recently, in the Quaternary period, alternating glacial and non-glacial episodes have further shaped the landscape through glacial erosion and deposition (Ryder 1992). Till of varying thickness and extent covers much of the less steep slopes at the mid and high elevations. Deep till, glaciolacustrine and glaciofluvial sediments with occasional pockets of deformation comprise the valley fill. There is an extensive glaciolacustrine terrace along the east bank of Columbia Lake. This low lying bench is the remnant of the sediments deposited when the valley was occupied by an ice dammed lake at the end of the last glaciation.

In postglacial time, reworking of the glacial deposits by wind, water and gravity has modified the landscape to its present form. Colluvial and fluvial processes have resulted in veneers, fans, and cones that overlie glacial deposits and bedrock. Large fluvial fans partly cover the glacial lake benches, and both fans and lake sediments have been covered by a thin, discontinuous veneer of eolian (wind deposited) silt and sand.

The landforms and materials described above form the unique sets of conditions that support the different ecosystems found in the study area.

1.3 ECOSECTION AND BIOGEOCLIMATIC CLASSIFICATION OF THE STUDY AREA

The study area occurs in the East Kootenay Trench (EKT) ecosection at the lower elevations along the Columbia Lake and up to the upper limit of the IDFdm2 zone. Above the IDFdm2 along the west facing slopes of the Rocky Mountains the Southern Park Ranges (SPK) ecosection occurs (Demarchi, 1996).

There are five biogeoclimatic subzones (Braumandl and Curran 1992) represented in the study area. They are:

- 1) **IDFun** - The Kootenay undifferentiated Interior Douglas-fir (Windermere Lake) variant occurs from the Columbia Lake up to approximately 900 m. This corresponds to an abrupt change of slope from the gently sloping valley floor to the steep mountain slopes.
- 2) **IDFdm2** - The Kootenay Dry Mild Interior Douglas-fir Variant which occurs between 900-1200 m in elevation on warm aspects and between 900 and 1100 m. on cool aspects
- 3) **MSdk** -The Dry Cool Montane Spruce Subzone which occurs between 1200 and 1800 m. elevation on warm aspects and between 1100 and 1700 m. elevation on cool

aspects

4) **ESSFdk** - The Dry Cool Engelmann Spruce Subalpine Fir Subzone which occurs between 1800 and 2260 m. elevation on warm aspects and between 1700 and 2200 m. on cool aspects.

5) **ESSFdkp** - The Dry Cool Engelmann Spruce Subalpine Fir Parkland Subzone which occurs at elevations above 2260 m on warm aspects and 2200 on cool aspects to approximately 2400 m

1.4 CONTRACT TIMING

Field work began in July 1996 and the draft mapping and report were completed in August 1997.

2.0 OBJECTIVES

The objectives of this project are as follows:

1. to produce a drafted terrestrial ecosystem map and a digital numbered polygon bioterrain and ecosystem data base, registered to 1:20,000 TRIM base maps
2. to produce a wildlife habitat management treatment unit map, based on ecosystem mapping and registered to 1:20,000 TRIM base maps
3. to produce a report describing the study area, sampling techniques, method of ecosystem unit derivation, method of habitat treatment unit derivation and derivation of habitat requirements of red and blue listed species.
4. to produce an ecosystem unit expanded legend table which includes the following:
 - dominant and /or diagnostic plant species listed by ecosystem and structural stage
 - ungulate forage listed by ecosystem unit and structural stage
 - the suitability and capability of each ecosystem unit to support ungulates, bear and red and blue listed species feeding and reproductive activities

3.0 METHODS

3.1 PRE-STRATIFICATION OF BIOTERRAIN

Terrain polygons mapped by Ryder (1993) were used as the pre-stratification of the bioterrain.

The first step was to map terrain according to *Terrain Classification System for British Columbia* (Howes and Kenk, 1988). These surficial units were subdivided by features such as directional exposure, depth to water table, vegetated rock and very thin rubble surfaces, talus, cliffs and significant changes in bedrock. Features considered important for the differentiation of bioterrain within the study area are described by Maxwell (RIC, 1996) amendments.

These units of bioterrain are mapped as solid lines in ink on air photos using a number 2 size pen. These have been approved by the appropriate technical expert (Bob Maxwell, Wildlife Branch). 1:20,000 air photos were pre-stratified for bioterrain using the methods of Howes and Kenk (1988), Ryder (1994) and RIC (1995). Terrain information was correlated with Lacelle (1990) in areas of overlap in the study area. They were checked for consistency by Larry Lacelle of Wildlife Branch, MOELP, Victoria in December 1996, edits were made where necessary. These bioterrain polygons formed the basis of the ecosystem map.

3.2 SAMPLING

Ecosystem data was collected to the standards set forth in Luttmerding et al. (1990) and the Field Manual for Describing Terrestrial Ecosystems (1996). Sample plots were chosen to best represent the distribution of ecosystems within each biogeoclimatic unit.

3.3 BIOTERRAIN UNIT MAPPING

Pre-stratified bioterrain polygons were adapted from field work and mapped by D. Spaeth of *J.M. Ryder and Associates Terrain Analysis Inc.* using the following methods.

Bioterrain units were mapped following the standards of Howes and Kenk (1988) and RIC (1995,1996). Symbology follows the system of Howes and Kenk (1988). Complex polygons can have up to three terrain units within a single polygon. Percentage distribution of terrain units was represented by deciles from 1 to 9 (1=10%, 9=90% and 10=100%). The following label is an example of bioterrain notation. Codes for each letter can be found in Table 1.

EXAMPLE TERRAIN POLYGON NOTATION

6 srC₆by - 4Mbj
Rs m
w

This polygon label would be read as:

60% sandy, rubbly Colluvial blanket-veneer, overlying steep rock; well drained and
40% Morainal blanket, gently sloping; moderately well drained

Table 1: Bioterrain unit letter notation (from Howes and Kenk, 1988)

TEXTURE	SURFICIAL MATERIAL	SURFACE EXPRESSION	GEOLOGICAL PROCESS
a=blocks	C=colluvial	b=blanket v=veneer	A=avalanches B=braided channel
b=boulders	D=weathered bedrock	c=cone t=terrace	C=cryoturbation D=deflation
k=cobbles	E=eolian	f=fan	E=channelled F=slow mass movement
s=sand	F=fluvial	h=hummocky u=undulating	H=kettled I=irregular channel
z=silt	FG=fluvial glacial	j=gentle slope	J=anastomosing channel K=karst processes
c=clay	L=lacustrine	k=moderately steep	M=meandering channel N=nivation
d=mixed fragments	LG=glaciolacustrine	m=rolling	P=pipng R=rapid mass movement
g=gravel	M=morainial	p=plain	S=solifluction U=inundation
a=angular fragments	O=organic	r=ridged	V=gully erosion W=washing
r=rubble	R=bedrock AQ=aquatic	s=steep	A = active process I = inactive process

SOIL DRAINAGE NOTATION

r= rapid w=well m= moderately well i=imperfectly p= poor v=very poor

3.4 ECOSYSTEM UNIT MAPPING

Ecosystem units were mapped according to the standards set forth in Terrestrial Ecosystem Mapping Methodologies (RIC 1995, 1996). Ecosystem units were mapped within the boundaries of the bioterrain polygon. These polygons were split when natural disturbances such as fire resulted in two strongly contrasting seral stages. Bioterrain polygons were subdivided by biogeoclimatic subzone lines, consequently there are more ecosystem polygons indicated on the mylar than bioterrain polygons inked on the air photos.

Sample plots were keyed out to site series using the keys in the Nelson Forest Region, MOF Ecosystem guide (Braumandl and Curran 1992). Ecosystems were identified for each polygon based on the terrain unit, sample plots that occurred within the polygon, and age class information from forest cover maps. Up to three ecosystems were noted for each polygon.

Site modifying codes were used with each ecosystem designation to help improve the accuracy of ecosystem descriptions. When specific features of the site altered the nature of the floristics of an ecosystem unit, that unit received a separate description in the expanded legend.

Percentage distribution of habitat units was represented by deciles from 1 to 10 (1=10% 9=90% and 10=100%). Two letter codes are followed by structural stage designations 1-7 (non-vegetated - Old forest). In addition, up to two site modifiers may be present (in lower case) that represent different site conditions than the typical defined for the site series. Potential site modifiers used were:

a - active floodplain	r - ridged
c - coarse textured soils	s - shallow soil
d - deep soil (>100cm)	w - warm, southerly or westerly aspect
f - fine textured soils	(>25% slope 135 - 285 degrees)
g - gullied	t - terraced
j - gently sloping (< 25%)	v - very shallow soil (< 50 cm deep)
y - wetter than average	k - cool, northerly or easterly aspect
n - fluvial fan	(>25% slope 285 - 135 degrees)
p - peaty material surface	x - drier than average
z - very steep (>70 % slope)	

EXAMPLE ECOSYSTEM POLYGON NOTATION

6FC5-4LJw6

This polygon label would read as:

60% Subalpine Fir - Grouseberry - Cladonia; typic ecosystem unit; young forest
 40% Lodgepole pine - Juniper - Lupine; warm aspect ecosystem unit; mature forest
 (See Section 6.0 for a full description of the two letter codes)

3.4.1 STRUCTURAL STAGES

- 1 - Non-Vegetated/Sparsely Vegetated (< 20 yrs)¹
- 2 - Grass-Forb (< 20 yrs)¹
- 3 - Shrub/Herb (< 20 yrs)¹
- 3a - Low Shrub (< 20 yrs)¹
- 3b - Tall Shrub (< 20 yrs)¹
- 4 - Pole/Sapling (20-40 yrs)
- 5 - Young Forest (40-80 yrs)
- 6 - Mature Forest (80-140 yrs -ESSFdk,MSdk), (80-250yrs -IDFun,IDFdm2 zones)
- 7 - Old Forest (> 140 yrs -ESSFdk,MSdk), (>250 yrs -IDFun,IDFdm2 zones)

¹ Age only applies to units going to trees

3.4.2 NAMING OF ECOSYSTEM UNITS

Ecosystem units are defined as occurring in a typical situation which is defined by provincial site series coding standards (RIC 1996, Appendix J). Where an ecosystem unit is mapped as occurring on the typical site it is followed by the qualifier 'typic'. For example, the FdPI - Pinegrass - Twinflower ecosystem unit typically is found on gently sloping sites with deep medium textured soils. When it is mapped on these sites it is called the **FdPI - Pinegrass - Twinflower; typic ecosystem unit**. However, if this unit was sampled and found to occur on steep cool aspects the name would be modified and called **FdPI - Pinegrass - Twinflower; cool aspect ecosystem unit** to reflect that it is a local occurrence and not typical for that unit.

3.5 WORKING LEGEND AND EXPANDED LEGEND DEVELOPMENT

While in the field a working legend was developed to ensure that we sample most of the variability found and that we do not oversample certain ecosystem units.

Sample plots were used to develop the expanded ecosystem legend. Structural stages were extrapolated based on plot information to describe structural stages not sampled. Site series descriptions in Braumandl and Curran (1992) were used to describe unsampled ecosystems that occurred in the study area

3.6 DATA ANALYSIS

Each plot was allocated to an existing site series by using the keys provided in Braumandl and Curran (1992). In the IDF undifferentiated biogeoclimatic subzone, plot data was entered into VENUS (**V**egetation **E**nvironment **N**exus) format and site series approved for mapping by the Regional Ecologist (Tom Braumandl, MOF Nelson) (see Appendix VII Vol. 2). After all site series for mapping were finalized, plots were then sorted by ecosystem classification, and physical information was compared between plots to give an impression of the range of bioterrain units that an ecosystem was found on.

3.7 WILDLIFE SUITABILITY RATINGS

Suitability of each ecosystem unit and structural stage to support wintering ungulates was determined using capability ratings based on work by Demarchi (1986) and using the nomenclature system of Demarchi (1995). The capability of each ecosystem unit is defined as the best suitability rating for that unit over all the structural stages. Ratings were determined for Rocky Mountain Bighorn Sheep (*Ovis canadensis canadensis*), Mule Deer (*Odocoileus hemionus*), White-tailed Deer (*Odocoileus virginiana*), Rocky Mountain Elk (*Cervus elaphus nelsoni*), Moose (*Alces alces*), and Mountain Goat (*Oreamnus americanus*). Ratings were also provided for selected red and blue listed species. See Appendix V (Vol. 2) for a complete list of the species and their suitability rating for each ecosystem unit.

Suitability of each ecosystem unit for black bear, grizzly bear (Fuhr and Demarchi, 1990) and red and blue listed (Harper, 1993) vertebrate species was also determined for each ecosystem unit and structural stage. Seasonal habitat requirements and reproductive requirements were determined for these species. These needs were assessed comparatively to the "best" habitats in British Columbia and a suitability rating for each ecosystem unit and structural stage were determined. The capability of that ecosystem unit to support feeding and reproduction of that species is defined as the best suitability for that unit.

Management treatment unit prescriptions were determined through discussions with Provincial Wildlife Correlator Dennis Demarchi, review of the literature, and personal experience of the authors in similar habitats in the East Kootenay Trench. Management prescriptions are driven by the ecosystem unit classification. Terrain features such as depth of materials, soil texture, and terrain origin were important criteria considered when the nature of habitat enhancement activities were determined. The potential for site degradation caused by burning was considered with equal or greater importance to the effect on the production of forage for wintering Rocky Mountain Bighorn Sheep. The effect of burning on the growth of antelope brush, saskatoon, and bunch grasses was also considered when management prescriptions were made based on the work of Thompson (1990), and a review of the literature in Ketcheson et. al. (1996).

Habitat heterogeneity, biodiversity, and protection of important habitats, were the primary goal for enhancement activities. The goal was to improve the overall quality of high capability winter range while simultaneously facilitating the maintenance and renewal of cover areas into mature forested stands.

4.0 DATABASES

4.1 PLOT DATABASE

Environment, Vegetation, and Ecosystem summary tables were exported to Excel 6.0 from VENUS 1.5 data. These were used to sort the plots into existing site series groupings in the Nelson Forest Region. New site series for the undifferentiated IDF

subzone will be sorted using VENUS 2.0. Plot data can be found in Appendix II (Vol. 2)

4.2 BIOTERRAIN AND ECOSYSTEM DATABASE

A standard EXCEL spread sheet was used to record bioterrain and ecosystem attributes for each polygon. Each row describes a polygon number with up to three differing terrain and ecosystem attributes whose deciles must add up to 10. The content of each column follows the format suggested by the technical coordinator. Bioterrain and ecosystem databases are found in Appendix III and IV (Vol. 2). Standards follow RIC (1996) ammendments.

5.0 RESULTS

5.1 SURVEY INTENSITY LEVEL

Out of a total of 498 polygons, 100 (25 full and 75 visual plots) were sampled. This gives a 20% rate or a survey intensity level 4 in this study (RIC 1996)

5.2 ECOSYSTEM CLASSIFICATION

A total of 83 ecosystem units were mapped in the four biogeoclimatic subzones and variants of the study area. Each of these units may have site modifiers, which differ subtly from what is considered "typical" for that ecosystem unit (see Appendix J, RIC (1995)). The common and diagnostic vegetation found in these units together with potential forage species are listed in Section 6.0 for each biogeoclimatic zone. A list of observed and collected plant species is given in Appendix VI (Vol.2)

5.3 UNGULATE SUITABILITY/CAPABILITY RATINGS AND HABITAT ENHANCEMENT RECOMMENDATIONS

Each ecosystem unit and its structural stages have been rated for their suitability to support feeding and reproductive activities of ungulates. These ratings and habitat treatment prescriptions are listed "Interpretations" for each biogeoclimatic subzone.

5.4 RED AND BLUE LISTED SPECIES SUITABILITY/CAPABILITY RATINGS

Red and blue listed species present or potentially present in the study area were rated by ecosystem unit and structural stage for habitat suitability/capability to support feeding and reproductive activities of that species. A complete list of these species and ratings given are listed in Appendix V (Vol. 2).

5.5 RARE OR ENDANGERED PLANTS AND PLANT COMMUNITIES

Although, the focus of this TEM project was to produce ungulate suitability ratings and a habitat management treatment unit overlay, the East Columbia Lake study area has very unique plant communities that need to be mentioned. The scope and funding for this project did not allow for a detailed inventory of these communities.

There are three ecological reserves located within the study area. One is located around Armstrong Bay along Columbia Lake in the IDFun subzone, another on top of Mount Sabine in the MSdk subzone, and a third along the limestone cliffs in the southwest part of the study area in the IDFdm2 subzone.

A rare or endangered plant and plant community survey was completed by Roemer (1993) in the vicinity of Armstrong Bay. This information is included in Appendix VIII Vol. 2.

The Conservation Data Centre tracking lists have noted several rare plants and rare potential plant communities within this study area. (See Appendix VIII, Vol2). The rare ecosystems are "Douglas-fir - snowberry - balsamroot" the IDFdm2/02 (AW) site series which is blue listed and "Antelope-brush - bluebunch wheatgrass" the IDFdm2/03 (DS) site series which is red listed. These units are mapped frequently on significant slopes with warm aspects and coarse textured soils. Similar communities may also be located in the IDFun/02a(SW) and 02b(SW). The 02a(SW) unit has significant slopes on deep, medium textured soils. The 02b(SW) is a grassland unit with gentle slopes and deep, medium textured soils.

6.0 ECOSYSTEM DESCRIPTIONS

6.1 IDFun - Ecosystem Units

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake)Variant

AF Abandoned Field ecosystem unit

Description: Areas previously used for agriculture. Species lists can vary greatly on these sites due to disturbances

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
AF herb-forb	variable species composition depending on past history. May have: needlegrasses leafy spurge increaser weeds		unknown: grasses		

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\00 - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

BS - Beaked Sedge - Swamp horsetail; typic ecosystem unit

Description: BS typically occurs on mineral or peat-filled wetland periodically inundated. Vegetation is composed of emergents with the water table below the surface for part of the year.

BSp occurs on organic deposits.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
BS					
BS2, BSp2 wetland	beaked sedge swamp horsetail	scouring rush water sedge narrow-spiked reedgrass reed canarygrass great bulrush cattail	beaked sedge swamp horsetail	scouring rush water sedge narrow-spiked reedgrass reed canarygrass cattail	swamp horsetail scouring rush water sedge grasses
COMMENTS	Plot CV4 closely resembles some floristic similarities with this ecosystem unit. This ecosystem unit is mapped in the Columbia wetlands portion of the Stoddart Creek TEM. This unit was mapped in organic sites along the shores of Columbia Lake. Further classification of a sites series was not possible in study area due to a lack of supportive data to designate another site series in the IDFun.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\05 - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

CD ActSxw - Red-Osier Dogwood; typic ecosystem unit

CDn ActSxw - Red-Osier Dogwood; fan ecosystem unit

CDp ActSxw - Red-Osier Dogwood; peaty ecosystem unit

Description: Typically occurs on level to gently sloping sites with coarse-textured soils in receiving sites. It is commonly mapped on active floodplains. Soil moisture regimes are generally subhygric.

CDn occurs on fluvial fans. CDp occurs on sites with organic soil development over mineral soil.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
CD2, CDn2, CDp2 shrub herb	bluejoint fireweed	horsetail sedges	bluejoint fireweed	horsetail sedges	bluejoint fireweed horsetail sedges
CD3a, CDn3a, CDp3a low shrub	red-osier dogwood bluejoint willows	black cottonwood mountain alder roses horsetail sedges	red-osier dogwood bluejoint willows	black cottonwood horsetail sedges	bluejoint roses horsetail sedges red osier dogwood
CD3b, CDn3b, CDp3b tall shrub	black cottonwood hybrid white spruce red-osier dogwood	mountain alder willows roses horsetail sedges	black cottonwood red-osier dogwood	willows horsetail sedges	roses horsetail sedges red osier dogwood

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL CD	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		bluejoint			
CD4, CDn4, CDp4 pole sapling	black cottonwood hybrid white spruce red-osier dogwood	mountain alder willows roses horsetail sedges bluejoint	black cottonwood red-osier dogwood	willows horsetail sedges bluejoint	bluejoint roses horsetail sedges red osier dogwood
CD5, CDn5, CDp5 young forest	black cottonwood hybrid white spruce red-osier dogwood	mountain alder willows roses horsetail sedges bluejoint	black cottonwood red-osier dogwood	willows bluejoint fireweed horsetail sedges	bluejoint fireweed horsetail sedges red osier dogwood
CD6, CDn6, CDp6 mature forest	hybrid white spruce red-osier dogwood	mountain alder black cottonwood willows roses horsetail sedges bluejoint	red-osier dogwood	black cottonwood willows bluejoint horsetail sedges	bluejoint fireweed horsetail sedges red osier dogwood
CD7, CDn7, CDp7 old forest	hybrid white spruce red-osier dogwood	black cottonwood mountain alder willows roses horsetail sedges bluejoint	red-osier dogwood	black cottonwood willows bluejoint horsetail sedges	bluejoint fireweed horsetail sedges red osier dogwood

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL CD	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
COMMENTS					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake)Variant

CF Cultivated Field ecosystem unit

Description: Areas presently being used for agriculture. Various crops are grown on these sites.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
CF herb-forb	unknown: depends on crop grown		unknown: depends on crop grown		unknown: depends on crop grown

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\01 - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

- DJ Fd - Rocky-Mountain juniper; typic ecosystem unit**
- DJcr Fd - Rocky-Mountain juniper; coarse textured, ridge ecosystem unit**
- DJn Fd - Rocky-Mountain juniper; fan ecosystem unit**
- DJs Fd - Rocky-Mountain juniper; shallow soil ecosystem unit**
- DJt Fd - Rocky-Mountain juniper; terraced ecosystem unit**
- DJw Fd - Rocky-Mountain juniper; warm aspect ecosystem unit**

Description: DJ typically occurs on gentle sites with deep-medium textured soils. Commonly occurs on morainal and glaciolacustrine parent materials with mesic soil moisture regimes

DJcr is similar to typic but has coarse textured soils and occurs on ridges.

DJn occurs on fluvial fans.

DJs occurs on shallow soils.

DJt occurs glaciolacustrine terraces

DJw occurs on warm aspects

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DJ2,DJcr2,DJn2,DJs2, DJt2 shrub herb	none	bluebunch wheatgrass cheatgrass nodding onion		bluebunch wheatgrass nodding onion	nodding onion
DJ3a,DJcr3a,DJn3a, DJs3a, DJt3a low shrub 95-23371	shrubby sites of: Douglas-fir	Rocky-Mountain juniper bluebunch wheatgrass nodding onion kinnikinnick cheat grass		bluebunch wheatgrass nodding onion kinnikinnick	nodding onion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DJ3b,DJcr3b,DJn3b, DJs3b, DJt3b tall shrub 95-23288	shrubby sites of: Douglas-fir	Rocky-Mountain juniper bluebunch wheatgrass nodding onion kinnikinnick pinegrass		bluebunch wheatgarss nodding onion kinnikinnick	nodding onion
DJ4,DJcr4,DJn4,DJs4, DJt4 pole sapling 95-23256	closed stands of: Douglas-fir	Rocky-Mountain juniper bluebunch wheatgrass nodding onion kinnikinnick pinegrass sickle moss <i>Peltigera</i> spp.		bluebunch wheatgarss nodding onion kinnikinnick	nodding onion
DJ5,DJcr5,DJn5,DJs5, DJt5 young forest 964320,C113	open stands of: Douglas-fir	Rocky-Mountain juniper bluebunch wheatgrass nodding onion kinnikinnick pinegrass sickle moss <i>Peltigera</i> spp.		bluebunch wheatgarss nodding onion kinnikinnick	nodding onion
DJ6,DJcr6,DJn6DJs6, DJt6 mature forest CV2,CV3,CV21,K20,K21,K 23	open stands of: Douglas-fir	Rocky-Mountain juniper bluebunch wheatgrass nodding onion kinnikinnick pinegrass sickle moss <i>Peltigera</i> spp.		bluebunch wheatgarss nodding onion kinnikinnick	nodding onion
DJ7,DJcr7,DJn7,DJs7,	open stands of:	Rocky-Mountain juniper		bluebunch wheatgarss	nodding onion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DJt7 old forest CV20	Douglas-fir	bluebunch wheatgrass nodding onion kinnikinnick pinegrass sickle moss <i>Peltigera</i> spp.		nodding onion kinnikinnick	
COMMENTS					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\03 - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

DP Fd - Pinegrass - Step moss; typic ecosystem unit

Description: DP typically occurs on moderate to steep slopes with cool aspects. Soil moisture regimes are generally mesic to subhygric with medium to rich nutrient regimes (often calacareous).

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DP2 shrub herb	fireweed	pinegrass	fireweed	pinegrass	fireweed
DP3a low shrub	shrubby sites of: paper birch	Douglas-fir pinegrass fireweed	paper birch	pinegrass	
DP3b tall shrub	shrubby sites of: Douglas-fir	paper birch pinegrass fireweed	paper birch	pinegrass	
DP4 pole sapling	dense stands of: Douglas-fir	paper birch pinegrass step moss red-stemmed feathermoss	paper birch	pinegrass	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DP5, young forest 95-23223	closed stands of: Douglas-fir	pinegrass step moss red-stemmed feathermoss		pinegrass	
DP6, mature forest	closed stands of: Douglas-fir	pinegrass step moss red-stemmed feathermoss		pinegrass	
DP7 old forest	closed stands of: Douglas-fir	pinegrass step moss red-stemmed feathermoss			
COMMENTS					

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

ES Exposed Soil ecosystem unit

ESw Exposed Soil warm aspect ecosystem unit

Description: Exposed mineral soils generally on glaciofluvial, glaciolacustrine or colluvial slopes with warm aspects. Less than 10% coverage of vegetation.

ESw occurs on warm aspects.

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

ROw Rock outcrop; warm aspect ecosystem unit

Description: Rock outcroppings with surficial material deposits, may have some fine textured material as a result of weathering. Very xeric to xeric moisture regime. Less than 10% vegetation cover.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >10%	ASSOCIATES 5-10%	DOMINANTS >10%	ASSOCIATES 5-10%	BEAR FORAGE
ROw	open rock with low cover of: saskatoon	grasses foliose lichens fruticose lichens	saskatoon	grasses	saskatoon grasses
COMMENTS	Floristics may be much more diverse than listed here depending on microclimatic features				

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

RP Road Surface ecosystem unit

Description: Non-vegetated gravel road surface and adjacent partially vegetated cut and fill slopes.



EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\04 - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

- SS Sxw - Sarsaparilla; typic ecosystem unit**
- SSft Sxw - Sarsaparilla; fine-textured, terraced ecosystem unit**
- SSg Sxw - Sarsaparilla; gullied ecosystem unit**
- SSk Sxw - Sarsaparilla; cool aspect ecosystem unit**
- SSt Sxw - Sarsaparilla; terraced ecosystem unit**

Description: SS typically occurs on toe slopes with deep medium-textured soils. Soil moisture regimes are generally subhygric. Commonly found in gullies at the base of cool aspects.

SSft occurs on fine textured glaciolacustrine terraces.

SSg occurs in gullies.

SSk occurs on cool aspects.

SSt occurs on terraces.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SS					
SS2,SSft2,SSg2,SSk2,SSt2 shrub herb	blue wildrye fireweed	trembling aspen bluejoint wild sarsaparilla	blue wildrye fireweed	bluejoint trembling aspen	grasses fireweed
SS3a , SSft3a, SSg3a,SSk3a,SSt3a low shrub	prickly rose red-osier dogwood	trembling aspen paper birch Douglas maple blue wildrye wild sarsaparilla	red osier dogwood	trembling aspen paper birch Douglas maple	prickly rose blue wildrye red osier dogwood
SS3b ,SSft3b,	trembling aspen	prickly rose	trembling aspen	blue wildrye	prickly rose

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SSg3b,SSk3b,SSt3b tall shrub	paper birch red-osier dogwood Douglas maple	blue wildrye wild sarsaparilla	paper birch red-osier dogwood Douglas maple		blue wildrye red osier dogwood
SS4 , SSft4, SSg4,SSk4,SSt4 pole sapling	trembling aspen paper birch red-osier dogwood	hybrid white spruce Douglas maple prickly rose blue wildrye wild sarsaparilla	red-osier dogwood	Douglas maple blue wildrye	prickly rose red osier dogwood blue wildrye
SS5 , SSft5, SSg5,SSk5,SSt5 young forest CV1	trembling aspen paper birch red-osier dogwood	hybrid white spruce Douglas maple prickly rose blue wildrye wild sarsaparilla	trembling aspen paper birch red-osier dogwood	Douglas maple blue wildrye	prickly rose red osier dogwood blue wildrye
SS6 ,SSft6, SSg6,SSk6,SSt6 mature forest K17,K18,K22	hybrid white spruce Canada bunchberry twinflower step moss	paper birch red-osier dogwood blue wildrye showy aster wild sarsaparilla red-stemmed feathermoss		paper birch red-osier dogwood blue wildrye showy aster	red osier dogwood blue wildrye Canada bunchberry
SS7 , SSft7, SSg7,SSk7,SSt7 old forest	hybrid white spruce Canada bunchberry twinflower step moss	paper birch red-osier dogwood blue wildrye showy aster wild sarsaparilla red-stemmed feathermoss		paper birch red-osier dogwood blue wildrye showy aster	red osier dogwood blue wildrye Canada bunchberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SS	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
COMMENTS	There are many rare plant species found in this unit as mapped along the northeast side of Armstrong Bay that are not listed in this description as they may not be typical for the unit. A complete list of these species can be found in Appendix VIII				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun\02b - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

- SW Pasture Sage - Bluebunch wheatgrass; typic ecosystem unit**
- SWft Pasture Sage - Bluebunch wheatgrass; fine textured, terraced ecosystem unit**
- SWn Pasture Sage - Bluebunch wheatgrass; fan ecosystem unit**
- SWs Pasture Sage - Bluebunch wheatgrass; shallow soil ecosystem unit**
- SWv Pasture Sage - Bluebunch wheatgrass; very shallow soil ecosystem unit**

Description: SW typically occurs on gently sloping sites with deep medium-textured soils. This is a grassland community with <10% tree cover. Soil moisture ranges from submesic to mesic.
 SWft occurs on fine textured glaciolacustrine terraces.
 SWn occurs on fluvial fans.
 SWs occurs on shallow soils.
 SWv occurs on very shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SW					
SW2 , SWft2, SWn2, SWs2, SWv2 grassland 964302,964303,964317, 964348,964349,964350, CV16,CV17,CV18,CV19,C V24,K16	open grasslands of: bluebunch wheatgrass	junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
COMMENTS	Canada bluegrass, Brown-eyed Susan, and leafy spurge will occur in seral stages of these grasslands. This site series is similar to those listed by the Conservation Data Centre containing rare plant communities. See Appendix VIII				

Figure 2. IDFun/02b: SW2 Pasture Sage - Bluebunch wheatgrass; typic ecosystem unit

IDFun\02a - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

SW Pasture Sage - Bluebunch wheatgrass; typic ecosystem unit

SWk Pasture Sage - Bluebunch wheatgrass; cool aspect ecosystem unit

SWsw Pasture Sage - Bluebunch wheatgrass; shallow soil, warm aspect ecosystem unit

SWvw Pasture Sage - Bluebunch wheatgrass; very shallow soil, warm aspect ecosystem unit

SWw Pasture Sage - Bluebunch wheatgrass; warm aspect ecosystem unit

Description: SW typically occurs on gentle to moderate slopes with deep medium textured soils.

SWw occurs on steep warm aspects. Soil moisture regimes are generally xeric to submesic with medium to rich nutrient regimes (often calacareous).This unit has very open stands of 10 - 25% tree cover.

SWk is similar to SWw but occurs on cool aspects.

SWsw is similar to SWw but occurs on shallow soils.

SWvw is similar to SWw but occurs on very shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SW					
SW2,SWsw2,SWvw2, SWw2 shrub herb 964347	open grasslands of: bluebunch wheatgrass	junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion
SW3a,SWsw3a,SWvw3a, SWw3a low shrub	open sites of: bluebunch wheatgrass	Douglas-fir junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SW3b,SWsw3b,SWvw3b, SWw3b tall shrub	open sites of: bluebunch wheatgrass	Douglas-fir junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion
SW4,SWsw4,SWvw4,SW w4 pole sapling	open sites of: bluebunch wheatgrass	Douglas-fir junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion
SW5,SWsw5,SWvw5, SWw5 young forest	open sites of: bluebunch wheatgrass	Douglas-fir junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SW	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SW SW7,SWsw7,SWvw7, SWw7 old forest	open sites of: bluebunch wheatgrass	Douglas-fir junegrass pasture sage nodding onion California comandra golden aster	bluebunch wheatgrass	nodding onion	nodding onion
COMMENTS	Forested stages of this site series differ only in the presence and structural stage of Douglas-fir. Understory species composition will remain relatively constant. This site series is simliar to the those listed by the Conservation Data Centre containing rare plant communities. See Appendix VIII				

IDFun - Kootenay undifferentiated Interior Douglas Fir (Windermere Lake) Variant

UR Urban ecosystem unit

Description: Non-vegetated and vegetated urban development.

5.2.1 IDFun - Interpretation Tables

CD - ActSxw - Red-Osier Dogwood

IDFun						
CD	CD2-herb	CD3-shrub/herb	CD4-pole sapling	CD5 young forest	CD6 mature forest	CD7 old forest
LIMITATIONS FOR PRESENT UNGULATE USE	-isolated patchy units	-isolated patchy units	-isolated patchy units	-isolated patchy units	-isolated patchy units	-isolated patchy units
HABITAT MANIPULATION CONSIDERATIONS	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation	-subject to flooding and deposition of fluvial materials -sensitive to road building, water flow obstruction -no manipulation
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-no management practical	-no management practical	-no management practical	-no management practical	-no management practical	-no management practical

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun						
CD	CD2-herb	CD3-shrub/herb	CD4-pole sapling	CD5 young forest	CD6 mature forest	CD7 old forest
Mule Deer	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors
White-tail Deer	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors
Elk	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors	-maintain as movement corridors
Moose	- encourage succession to 3 & 4 structural stages	-allow access corridors	-allow access corridors	-allow access corridors	-allow access corridors	-allow access corridors
Mountain Goat	-no management practical	-no management practical	-no management practical	-no management practical	-no management practical	-no management practical
Red and blue listed	-maintain	-maintain	-maintain	-maintain	-maintain	-maintain

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun						
CD	CD2- herb	CD3- shrub/he rb	CD4- pole sapling	CD5 young forest	CD6 mature forest	CD7 old forest
species (see wildlife ratings)	snags and coarse woody debris -preserve shrubs & forested margins for nesting	snags and coarse woody debris -preserve shrubs & forested margins for nesting	snags and coarse woody debris -preserve shrubs & forested margins for nesting	snags and coarse woody debris	snags and coarse woody debris	snags and coarse woody debris
Furbearers	-maintain snags and coarse woody debris	-maintain snags and coarse woody debris	-maintain snags and coarse woody debris	-maintain snags and coarse woody debris	-maintain snags and coarse woody debris	-maintain snags and coarse woody debris
Fishery	-avoid soil erosion	-avoid soil erosion	-avoid soil erosion	-avoid soil erosion	-avoid soil erosion	-avoid soil erosion
Forest Harvest Activities	-none	-none	-none	-none	-none	-none
Limitations to Forestry Activities	-flooding likely -high wildlife values - biodiversi ty	-flooding likely -high wildlife values - biodiversi ty	-flooding likely -high wildlife values - biodiversi ty	-flooding likely -high wildlife values - biodiversi ty	-flooding likely -high wildlife values - biodiversi ty	-flooding likely -high wildlife values, biodiversi ty

DJ - Fd - Rocky-Mountain Juniper- Bluebunch wheatgrass

IDFun	DJ	DJ2-herb	DJ3-shrub/herb	DJ4-pole sapling	DJ5 young forest	DJ6 mature forest	DJ7 old forest
LIMITATIONS FOR PRESENT UNGULATE USE	-little cover -escape terrain must be adjacent to these sites for mule deer and bighorn sheep	-little cover -escape terrain must be adjacent to these sites for mule deer and bighorn sheep	-as in DJ2 -dense canopy can limit cover of forage species	-as in DJ4	-as in DJ4 -maintain sites in this structural stage to increase forage production	-as in DJ4 -maintain sites in this structural stage to increase forage production	-as in DJ4 -maintain sites in this structural stage to increase forage production
HABITAT MANIPULATION CONSIDERATIONS	-maintain at least 80% ground cover of terrestrial lichens to avoid erosion and maintain soil moisture -nutrient depletion after burning	-as in DJ2	-as in DJ2 -maintain clumpy nature of stand and develop movement corridors within the DJ2 matrix	-as in DJ2 -allow to proceed to structural stage 6 or 7 to increase forage production	-as in DJ2 -protect DJ6 stands adjacent to DJ2 and DJ3	-as in DJ2 -protect and maintain old growth stands as movement corridors adjacent to escape terrain in DJ2 and	-as in DJ2 -protect and maintain old growth stands as movement corridors adjacent to escape terrain in DJ2 and

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun DJ	DJ2- herb	DJ3- shrub/he rb	DJ4- pole sapling	DJ5 young forest	DJ6 mature forest	DJ7 old forest
	-slow rate of successi on					DJ3 units
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	- prescribe burn in spring in 7-10 year cycles -use road where possible as burn boundary -stagger burns to create a mosaic of seral stages -only burn areas that are adjacent to cover and move	-as in DJ2	- manually space stems to open stand and increase forage productio n -maintain cover within establis hed move ment corridors	-as in DJ4	-maintain as cover and moveme nt corridor -small group selection harvest in area where forage develop ment is a priority	-maintain as cover and moveme nt corridor

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun	DJ2-herb	DJ3-shrub/herb	DJ4-pole sapling	DJ5 young forest	DJ6 mature forest	DJ7 old forest
	nt corridors -restrict cattle grazing					
Mule Deer	-as above	-as above	as above		as above	-as above
White-tail Deer	-as above	-as above	-as above		-as above	-as above
Elk	-as above	-as above	-as above		-as above	-as above
Moose	-not applicable	-not applicable	-maintain shrub cover adjacent to riparian areas	-maintain shrub cover adjacent to riparian areas	-maintain forested cover adjacent to riparian areas	-maintain forested cover adjacent to riparian areas
Mountain Goat	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable
Red and blue listed species (see Table -)	-keep burns small and encourage the	-keep burns small and encourage the	-keep burns small -maintain seral stage matrix -leave snags and coarse woody debris	as in DJ4	-maintain mature forest cover -leave	-maintain old growth forest cover -leave snags and coarse woody debris for cavity nesting birds and

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun DJ	DJ2- herb	DJ3- shrub/ herb	DJ4- pole sapling	DJ5 young forest	DJ6 mature forest	DJ7 old forest
	development of a matrix of seral stages -leave snags and coarse woody debris for cavity nesting birds and mammals	development of a matrix of seral stages -leave snags and coarse woody debris for cavity nesting birds and mammals	for cavity nesting birds and mammals		snags and coarse woody debris for cavity nesting birds and mammals	mammals
Furbearers	-as above - do not burn sites adjacent to riparian	-as above - do not burn sites adjacent to riparian	-as above - do not burn sites adjacent to riparian	as in DJ4	as above	as above
Fishery	-avoid disturbance to litter layer and do not cause	-avoid disturbance to litter layer and do not cause	--avoid disturbance to litter layer and do not cause any potential for soil erosion -make sure areas adjacent to riparian are not disturbed	--avoid disturbance to litter layer and do not cause	avoid disturbance to litter layer and do not cause	avoid disturbance to litter layer and do not cause any potential for soil erosion -make sure areas adjacent to riparian are not disturbed

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IDFun DJ	DJ2- herb	DJ3- shrub/ herb	DJ4- pole sapling	DJ5 young forest	DJ6 mature forest	DJ7 old forest
	any potential for soil erosion -make sure areas adjacent to riparian are not disturbed	any potential for soil erosion -make sure areas adjacent to riparian are not disturbed			any potential for soil erosion -make sure areas adjacent to riparian are not disturbed	any potential for soil erosion -make sure areas adjacent to riparian are not disturbed
Forest Harvest Activities	-none	-none	-pre-commercial thinning where stands are large enough and creation of openings are necessary	-limited to small group selection harvest where stands are large enough and more forage is a priority	-limited to small group selection harvest where stands are large enough and more forage is a priority	-limited to small group selection harvest where stands are large enough and more forage is a priority
Limitations to Forestry Activities	-no trees -high wildlife value	-no trees -high wildlife value	-selection harvest -high wildlife value	-selection harvest -high wildlife values	-selection harvest -high wildlife values	-selection harvest -high wildlife values

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DP Fd - Pinegrass - Step moss

IDFun	DP2 herb	DP3 shrub/herb	DP4 pole sapling	DP5 young forest	DP6 mature forest	DP7 old forest
LIMITATIONS FOR PRESENT UNGULATE USE	-low cover of preferred forage species -cool aspect	-low cover of preferred forage species -cool aspect	-dense canopy -cool aspect	-dense canopy -cool aspect	-low cover of forage species	-low cover of forage species
HABITAT MANIPULATION CONSIDERATIONS	-steep slopes -unstable soils subject to erosion	-as in DP2	-as in DP2	-as in DP2	-as in DP2	-as in DP2
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-allow to grow to mature forest or old growth stage	-as in DP2	-as in DP2	-as in DP2	-no manipulation	-no manipulation
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as	-as	-as	-as	-as	-as

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFun	DP2 herb	DP3 shrub/herb	DP4 pole sapling	DP5 young forest	DP6 mature forest	DP7 old forest
	above	above	above	above	above	above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-as above	-as above	-as above	-as above	-as above	-as above
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-allow to grow to mature forest or old growth stage	-as in DP2	-as in DP2	-as in DP2	- no manipulation	-no manipulation
Furbearers	as above	as in DP2	as in DP2	-as in DP2	- no manipulation	-no manipulation
Fishery	as above	-as in DP2	-as in DP2	-as in DP2	-as in DP2	-as in DP2
Forest Harvest Activities	none	none	none	none	none	none
Limitations to Forestry Activities	-steep slopes -erodible, unstable soils	-as in DP2	-as in DP2	-as in DP2	-as in DP2	-as in DP2

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SS Sxw - Sarsaparilla

IDFun						
SS	SS2 herb	SS3 shrub/herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
LIMITATIONS FOR PRESENT UNGULATE USE	-isolated units	-isolated patchy units	-isolated patchy units	-isolated units	-isolated units	-isolated units
HABITAT MANIPULATION CONSIDERATIONS	-sensitive sites -moist soils -no manipulation recommended	-sensitive sites -moist soils -no manipulation recommended	-sensitive sites -moist soils -no manipulation recommended	-sensitive sites -moist soils -no manipulation recommended	-sensitive sites -moist soils -no manipulation recommended	-sensitive sites -- moist soils -no manipulation recommended
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-no treatment -no development	-no treatment -no development	-no treatment -no development	-no treatment -no development	-no treatment -no development	-no treatment -no development
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-as above	-as above	-as above	-as above	-as above	-as above
Mountain Goat	-as above	-as above	-as above	-as above	-as above	-as above
Red and blue listed species	-as above	-as above	-as above	-as above	-as above	-as above

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IDFun						
SS	SS2 herb	SS3 shrub/herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
LIMITATIONS FOR PRESENT UNGULATE USE	-isolated units	-isolated patchy units	-isolated patchy units	-isolated units	-isolated units	-isolated units
(see Table -)						
Furbearers	-as above	-as above	-as above	-as above	-as above	-as above
Fishery	-as above	-as above	-as above	-as above	-as above	-as above
Forest Harvest Activities	-none	-none	-none	-none	-none	-none
Limitations to Forestry Activities	site sensitivity, biodiversity	site sensitivity, biodiversity	-site sensitivity, biodiversity	-site sensitivity, biodiversity	-site sensitivity, biodiversity	-site sensitivity, biodiversity

**SW Pasture Sage - Bluebunch wheatgrass
SWw Pasture Sage - Bluebunch wheatgrass; warm aspect**

IDFun	SW2-grassland	SWw2-7 all structural stages
SW		
LIMITATIONS FOR PRESENT UNGULATE USE	-little cover escape terrain must be adjacent	-little cover escape terrain must be adjacent

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IDFun SW	SW2- grassland	SWw2-7 all structural stages
	to these sites for mule deer and bighorn sheep	to these sites for mule deer and bighorn sheep
HABITAT MANIPULATION CONSIDERATIONS	-maintain at least 80% ground cover of lichens to avoid erosion and maintain soil moisture	-maintain at least 80% ground cover of lichens to avoid erosion and maintain soil moisture - do not burn steep slopes or sites with shallow soils
HABITAT TREATMENT RECOMMENDATIONS		
Rocky Mountain Bighorn Sheep	-burn or manual brush	-manual brush encroach

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IDFun SW	SW2- grasslan d	SWw2-7 all structur al stages
	encroach ment at 7-10 year rotation	ment at 7-10 year rotation
Mule Deer	-as above	-as above
White-tail Deer	-as above	-as above
Elk	-as above	-as above
Moose	not applicabl e	not applicabl e
Mountain Goat	not applicabl e	not applicabl e
Red and blue listed species (see Table -)	-remove cattle	-remove cattle
Furbearers	-careful burning adjacent to riparian	-careful burning adjacent to riparian
Fishery	-remove cattle	-remove cattle
Forest Harvest Activities	none	none

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IDFun SW	SW2- grasslan d	SWw2-7 all structur al stages
Limitations to Forestry Activities	grasslan d	grasslan d

6.2 IDFdm2 - Ecosystem Units

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IDFdm2/02 - Kootenay Dry Mild Interior Douglas Fir Variant

- AW** Antelope-brush - Bluebunch wheatgrass; **typic ecosystem unit**
- AWn** Antelope-brush - Bluebunch wheatgrass; **fan ecosystem unit**
- AWr** Antelope-brush - Bluebunch wheatgrass; **ridge ecosystem unit**
- AWrv** Antelope-brush - Bluebunch wheatgrass; **ridge, very shallow soil ecosystem unit**
- AWs** Antelope-brush - Bluebunch wheatgrass; **shallow soil ecosystem unit**
- AWv** Antelope-brush - Bluebunch wheatgrass; **very shallow soil ecosystem unit**

Description: **AW** typically occurs on moderate to steep slopes with coarse-textured soils and warm aspects. Coarse fragment content is high, soil texture is sandy to sandy loam with mull or moder humus forms and brunisolic soil development.

AWn occurs on gently sloping fans.

AWr occurs on gently sloping ridges

AWrv occurs on gently sloping ridges with very shallow soils

AWs occurs on shallow soils

AWv occurs on very shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
AW2, AWn2,AWr2, AWrv2, AWs2, AWv2 shrub herb 964301, 964318	openings of: bluebunch wheatgrass lichen	saskatoon antelope-brush pasture sage Kentucky bluegrass yellow salsify dogbane nodding onion	bluebunch wheatgrass	saskatoon antelope-brush pasture sage Kentucky bluegrass	saskatoon nodding onion grasses
AW3, AWn3,AWr3, AWrv3, AWs3, AWv3	shrubby sites of: saskatoon	Douglas-fir Ponderosa pine rabbit-brush	bluebunch wheatgrass saskatoon	Douglas-fir rabbit-brush antelope-brush	saskatoon nodding onion grasses

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MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
Shrub/Herb C106	lodgepole pine bluebunch wheatgrass	saskatoon common juniper antelope-brush dogbane Kentucky bluegrass nodding onion			
AW4, AWn4, AWR4, AWrv4 AWs4, AWv4 pole sapling	clumpy stands of: saskatoon lodgepole pine bluebunch wheatgrass	Douglas-fir Ponderosa pine rabbit-brush common juniper antelope-brush dogbane Kentucky bluegrass nodding onion	saskatoon bluebunch wheatgrass	Douglas-fir dogbane Kentucky bluegrass nodding onion	saskatoon nodding onion grasses
AW5, AWn5, AWR5, AWrv5, AWs5, AWv5, AWf5 young forest	open stands of: Douglas-fir saskatoon bluebunch wheatgrass	lodgepole pine Ponderosa pine rabbit-brush common juniper antelope-brush dogbane Kentucky bluegrass nodding onion	Douglas-fir saskatoon bluebunch wheatgrass	dogbane Kentucky bluegrass nodding onion	grasses saskatoon nodding onion
AW6, AWn6, AWR6, AWrv6, AWs6, AWv6, AWf6 mature forest	open stands of: Douglas-fir saskatoon bluebunch wheatgrass	lodgepole pine Ponderosa pine rabbit-brush common juniper antelope-brush dogbane	Douglas-fir saskatoon bluebunch wheatgrass	dogbane Kentucky bluegrass nodding onion	bluebunch wheatgrass saskatoon nodding onion

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MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		Kentucky bluegrass noding onion			
AW7, AWn7, AWr7, AWrv7, AWs7, AWv7 old forest 964319,CV15A,CV23	open stands of: Douglas-fir saskatoon bluebunch wheatgrass	Ponderosa pine rabbit-brush saskatoon common juniper antelope-brush dogbane Kentucky bluegrass noding onion	Douglas-fir saskatoon bluebunch wheatgrass	dogbane Kentucky bluegrass noding onion	bluebunch wheatgrass saskatoon noding onion
COMMENTS	Open stands maintained by wildfire. Sites with shallow and very shallow soils will have very open forest cover (>15%). Shrubby structural stages may well exceed the age class for old forest. This site series is listed by the Conservation Data Centre as a rare plant community. See Appendix VIII				

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IDFdm2/03 - Kootenay Dry Mild Interior Douglas-Fir Variant

- DS Fd - Snowberry - balsamroot; typic ecosystem unit**
- DSct Fd - Snowberry - balsamroot; coarse-textured, terrace ecosystem unit**
- DSj Fd - Snowberry - balsamroot; gently sloping ecosystem unit**
- DSjs Fd - Snowberry - balsamroot; gently sloping, shallow soil ecosystem unit**
- DSs Fd - Snowberry - balsamroot; shallow soil ecosystem unit**
- DSt Fd - Snowberry - balsamroot; terrace ecosystem unit**

Description: **DS** typically occurs on moderate to steeply sloping sites with warm aspects and deep medium-textured soils. Found on morainal or colluvial blankets with submesic moisture regimes and submesotrophic to mesotrophic nutrient regimes. Soils have a silt loam texture with variable coarse fragment content. Soils are usually not calcareous

DSct occurs on coarse-textured (glaciofluvial) terraces

DSj occurs on gently sloping sites (open FdPy parkland)

DSjs occurs on gently sloping sites with shallow soils (open FdPy parkland on rocky sites)

DSs occurs on sites with shallow soils

DSt occurs on terraces

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DS2, DSct2, DSj2, DSjs2, DSs2, DSt2 herb	junegrass spreading needlegrass kinnikinnick	arrow-leaved balsamroot Kentucky bluegrass pinegrass bluebunch wheatgrass	junegrass spreading needlegrass	arrow-leaved balsamroot Kentucky bluegrass bluebunch wheatgrass	grasses kinnikinnick
DS3, DSct3, DSj3, DSjs3, DSs3, DSt3 Shrub / Herb	clumpy shrub and grassland mosaic of: Douglas-fir saskatoon kinnikinnick	snowberry birch-leaved spirea bluebunch wheatgrass junegrass common harebell	Kentucky bluegrass saskatoon Douglas-fir	junegrass bluebunch wheatgrass fringed aster	kinnikinnick saskatoon grasses

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
	Kentucky bluegrass	fringed aster foliose lichens			
DS4, DSct4, DSj4, DSjs4, DSs4,DSSt4 pole sapling C110	clumpy open young forests of: Douglas-fir kinnikinnick lichens	saskatoon snowberry choke cherry soopolallie birch-leaved spirea arrow-leaved balsamroot bluebunch wheatgrass junegrass pinegrass	Douglas-fir	saskatoon soopolallie bluebunch wheatgrass arrow-leaved balsamroot junegrass	saskatoon soopolallie grasses
DS5, DSct5, DSj5, DSjs5, DSs5,DSSt5 young forest 964300,C111,C112	clumpy open canopy forests of: Douglas-fir kinnikinnick lichens	Rocky-Mountain juniper snowberry soopolallie choke cherry saskatoon birch-leaved spirea bluebunch wheatgrass arrow-leaved balsamroot pinegrass	Douglas-fir	Rocky Mtn juniper soopolallie saskatoon choke cherry bluebunch wheatgrass arrow-leaved balsamroot	saskatoon chokecherry bluebunch wheatgrass
DS6, DSct6, DSj6, DSjs6, DSs6,DSSt6 mature forest K19	open forests of: Douglas-fir pinegrass lichens	Rocky-Mountain juniper snowberry soopolallie choke cherry saskatoon bluebunch wheatgrass arrow-leaved	Douglas-fir	Rocky-Mountain juniper choke cherry saskatoon bluebunch wheatgrass arrow-leaved balsamroot	saskatoon soopolallie chokecherry kinnikinnick bluebunch wheatgrass

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		balsamroot kinnikinnick			
DS7, DSct7, DSj7, DSjs7, DSs7, DSt7 old forest K14	open forests of: Douglas-fir pinegrass lichens	Rocky-Mountain juniper snowberry soopolallie choke cherry saskatoon Oregon-grape birch-leaved spirea arrow-leaved balsamroot bluebunch wheatgrass kinnikinnick foliose lichens	Douglas-fir	Rocky-Mountain juniper saskatoon Oregon-grape arrow-leaved balsamroot bluebunch wheatgrass	soopolallie chokecherry saskatoon Oregon-grape bluebunch wheatgrass kinnikinnick
COMMENTS	Arrow-leaved balsamroot and kinnikinnick will have less cover on gently sloping sites This site series is listed by the Conservation Data Centre as a rare plant community. See Appendix VIII				

Figure 3. IDFdm2/03: DSj6 - Fd - Snowberry - Arrow-leaved balsamroot; gently sloping ecosystem unit

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2/01 - Kootenay Dry Mild Interior Douglas-fir Variant

- DT FdPI Pinegrass - twinflower; typic ecosystem unit**
- DTc FdPI Pinegrass - twinflower; coarse textured ecosystem unit**
- DTcs FdPI Pinegrass - twinflower; coarse textured, shallow soil ecosystem unit**
- DTf FdPI Pinegrass - twinflower; fine textured ecosystem unit**
- DTn FdPI Pinegrass - twinflower; fan ecosystem unit**
- DTs FdPI Pinegrass - twinflower; shallow soil ecosystem unit**

Description: **DT** typically occurs on gently sloping sites with deep medium-textured soils. These units occur on morainal or colluvial parent materials with submesic to mesic moisture regimes and permesotrophic nutrient regimes. Silt loam textures, mull (mor) humus forms, and eutric brunisol soil development are common.

DTc occurs on typic sites with coarse textured soils

DTcs occurs on typic sites with coarse textured soils and shallow soils.

DTf occurs on typic sites with fine textured soil.

DTn occurs on typic sites glaciofluvial fans.

DTs occurs on typic sites with shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DT2,DTc2,DTcs2, DTf2,DTn2,DTs2 herb	pinegrass rough fescue spreading needlegrass	fireweed timber milk-vetch stiff needlegrass kinnikinnick	rough fescue spreading needlegrass	fireweed timber milk-vetch stiff needlegrass	grasses timber milk-vetch kinnikinnick
DT3,DTc3,DTcs3, DTf3,DTn3,DTs3 shrub/herb	dense shrub cover of: lodgepole pine trembling aspen Douglas maple	Douglas-fir kinnikinnick saskatoon snowberry birch-leaved spirea wild rose	trembling aspen Douglas maple	saskatoon soopolallie stiff needlegrass	saskatoon soopolallie kinnikinnick

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
	pinegrass	soopolallie stiff needlegrass			
DT4,DTc4,DTcs4, DTf4,DTn4,DTs4 pole sapling C115	young dense forests of: Douglas-fir pinegrass	trembling aspen Douglas maple birch-leaved spirea soopolallie saskatoon wild rose	Douglas-fir	Douglas maple soopolallie saskatoon	soopolallie saskatoon wild rose
DT5,DTc5,DTcs5, DTf5,DTn5,DTs5 young forest 964316, 964306, 964305,C114, C122,	dense forests of: Douglas-fir pinegrass	trembling aspen lodgepole pine Rocky-Mountain juniper snowberry saskatoon soopolallie birch-leaved spirea twinflower step moss lichens	Douglas-fir	Rocky-Mountain juniper saskatoon soopolallie lodgepole pine	saskatoon soopolallie
DT6,DTc6,DTcs6, DTf6,DTn6,DTs6 mature forest	moderately open forests of: Douglas-fir pinegrass	Rocky-Mountain juniper snowberry saskatoon soopolallie birch-leaved spirea twinflower step moss lichens	Douglas-fir	Rocky-Mountain juniper saskatoon soopolallie	saskatoon soopolallie
DT7,DTc7,DTcs7, DTf7,DTn7,DTs7 old forest	moderately open forests of: Douglas-fir	Rocky Mountain juniper snowberry saskatoon	Douglas-fir	Rocky-Mountain juniper saskatoon soopolallie	saskatoon soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
	pinegrass	soopolallie birch-leaved spirea kinnikinnick twinflower step moss lichens			
COMMENTS					

Figure 4. IDFdm2/01: DT5 - FdPI - Pinegrass - Twinflower; typic ecosystem unit

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2 / 01 - Kootenay Dry Mild Interior Douglas-fir Variant

DT FdPI Pinegrass - twinflower; typic ecosystem unit

DTg FdPI Pinegrass - twinflower; gullied ecosystem unit

DTk FdPI Pinegrass - twinflower; cool aspect ecosystem unit

DTks FdPI Pinegrass - twinflower; cool aspect shallow soil ecosystem unit

DTkv FdPI Pinegrass - twinflower; cool aspect very shallow soil ecosystem unit

Description: DT typically occurs on gentle to moderately sloping medium-textured sites.

DTk occurs on moderately sloping medium-textured sites with cool aspects. These units occur on morainal or colluvial parent materials with submesic to mesic moisture regimes and permesotrophic nutrient regimes. Silt loam textures, mull (mor) humus forms, and eutric brunisol soil development are common

DTg is similar but occurs in gullies.

DTks is similar but occurs on cool aspects with shallow soils.

DTkv is similar but occurs on cool aspects with very shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DTg2,DTk2,DTks2, DTkv2 herb	pinegrass rough fescue spreading needlegrass	fireweed timber milk-vetch stiff needlegrass kinnikinnick	rough fescue spreading needlegrass	fireweed timber milk-vetch stiff needlegrass	grasses timber milk-vetch kinnikinnick
DTg3,DTk3,DTks3, DTkv3 shrub/herb	dense shrub cover of: lodgepole pine trembling aspen Douglas maple pinegrass	Douglas-fir kinnikinnick saskatoon snowberry birch-leaved spirea wild rose soopolallie stiff needlegrass	trembling aspen Douglas maple	Douglas-fir saskatoon soopolalie stiff needlegrass	grasses saskatoon kinnikinnick soopolalie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DTg4,DTk4,DTks4, DTkv4 pole sapling	young dense forests of: Douglas-fir pinegrass	trembling aspen Douglas maple birch-leaved spirea soopolallie saskatoon wild rose	Douglas-fir	Douglas maple soopolallie saskatoon	soopolallie saskatoon wild rose
DTg5,DTk5,DTks5, DTkv5 young forest C108,CV22	dense forests of: Douglas-fir pinegrass step moss	trembling aspen lodgepole pine Rocky-Mountain juniper snowberry saskatoon soopolallie birch-leaved spirea twinflower lichens	Douglas-fir	Rocky Mountain juniper Douglas maple saskatoon soopolallie trembling aspen	saskatoon soopolallie
DTg6,DTk6,DTks6, DTkv6 mature forest 964351	moderately open forests of: Douglas-fir pinegrass step moss	Rocky-Mountain juniper Douglas maple snowberry saskatoon soopolallie birch-leaved spirea twinflower lichens	Douglas-fir	Rocky Mountain juniper Douglas maple saskatoon soopolallie	saskatoon soopolallie
DTg7,DTk7,DTks7, DTkv7 old growth	moderately open forests of: Douglas-fir pinegrass step moss	Rocky Mountain juniper Douglas maple snowberry saskatoon soopolallie birch-leaved spirea twinflower	Douglas-fir	Rocky Mountain juniper Douglas maple saskatoon soopolallie	saskatoon soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		lichens			
COMMENTS	Step moss has a higher cover on cool aspects				

Figure 5. IDFdm2/01: DTk5 Fd - Pinegrass - Twinflower; cool aspect ecosystem unit

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2 - Kootenay Dry Mild Interior Douglas-fir Variant

ESw Exposed Soil ecosystem unit

Description: Exposed mineral soils generally on glaciofluvial, glaciolacustrine or colluvial slopes with warm aspects. Less than 10% coverage of vegetation.

IDFdm2 - Kootenay Dry Mild Interior Douglas-fir Variant

ROw Rock outcrop; warm aspect ecosystem unit

Description: Rock outcroppings with surficial material deposits, may have some fine textured material as a result of weathering. Very xeric to xeric moisture regime. Less than 10% vegetation cover.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >10%	ASSOCIATES 5-10%	DOMINANTS >10%	ASSOCIATES 5-10%	BEAR FORAGE
ROw	open rock with low cover of: saskatoon	grasses foliose lichens fruticose lichens	saskatoon	grasses	saskatoon grasses
ROk	open rock with low cover of: saskatoon	mosses foliose lichens fruticose lichens	saskatoon		saskatoon
COMMENTS	Floristics may be much more diverse than listed here depending on microclimatic features				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2 - Kootenay Dry Mild Interior Douglas-fir Variant

RUw - Rubble; warm aspect ecosystem unit

Description: Very thin colluvial veneers overlying bedrock. Generally less than 10% vegetation cover.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
RUw1		open rubble with low cover of: grasses foliose lichens fruticose lichens		grasses	grasses
RUk1		open rubble with low cover of: mosses foliose lichens fruticose lichens			
COMMENTS	Floristics can be very diverse on these sites				

IDFdm2 /00- Kootenay Dry Mild Interior Douglas-fir Variant

RP Road Surface ecosystem unit

Description: Non-vegetated gravel road surface and adjacent partially vegetated cut and fill slopes.

IDFdm2 /04-
Kootenay Dry
Mild Interior
Douglas-fir
Variant

SP FdLw -

Spuce -

**pinegrass; typic
ecosystem unit**

SPcg FdLw -

Spuce -

**pinegrass;
gully,coarse
textured soil
ecosystem unit**

SPg FdLw -

Spuce -

**pinegrass; gully
ecosystem unit**

SPgm FdLw -

Spuce -

**pinegrass; gully
medium textured
soil ecosystem
unit**

Description: SP

typically occurs
on flat or gently
sloping sites on
fine-textured soils
with subhygric
moisture and
permesotrophic
nutrients. Eutric
brunisol soil

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development is common.
SPg is similar to typic but occurs in mid-slope gullies
SPcg is similar to typic but occurs in mid-slope gullies with coarse textured soils.
SPgm is similar to typic but occurs in mid-slope gullies with medium textured soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SP2, SPg2, SPcg2, SPgm2 herb	herbaceous sites consisting of: pinegrass	fireweed showy aster		fireweed showy aster	fireweed
SP3, SPg3, SPcg3, SPgm3 shrub/herb	shrubby vegetation consisting of: paper birch trembling aspen pinegrass	Douglas-fir snowberry prickly rose soopolallie birch-leaved spirea showy aster twinflower	trembling aspen paper birch	Douglas-fir soopolallie showy aster	soopolallie prickly rose
SP4, SPg4, SPcg4, SPgm4 pole sapling	closed forests of: Douglas-fir	hybrid white spruce paper birch snowberry	Douglas-fir trembling aspen	paper birch soopolallie showy aster	soopolallie prickly rose

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MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
C109	trembling aspen pinegrass	prickly rose soopolallie birch-leaved spirea showy aster twinflower step moss			
SP5, SPg5, SPcg5, SPgm5 young forest	moderately open forests of: Douglas-fir trembling aspen pinegrass	hybrid white spruce paper birch snowberry prickly rose soopolallie birch-leaved spirea showy aster twinflower step moss	Douglas-fir trembling aspen	paper birch soopolallie showy aster	soopolallie prickly rose
SP6, SPg6, SPcg6, SPgm6 mature forest	moderately open forests of: Douglas-fir pinegrass	hybrid white spruce paper birch snowberry prickly rose soopolallie birch-leaved spirea showy aster twinflower step moss	Douglas-fir	soopolallie showy aster	soopolallie prickly rose
SP7, SPg7, SPcg7, SPgm7 old forest	moderately open forests of: Douglas-fir pinegrass	hybrid white spruce paper birch snowberry prickly rose soopolallie birch-leaved spirea showy aster	Douglas-fir	soopolallie showy aster	soopolallie prickly rose

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MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		twinflower step moss			
COMMENTS					

IDFdm2/05 -
Kootenay Dry
Mild Interior
Douglas-fir
Variant

**SS - SxwAt -
Sarsaparilla;
typic ecosystem
unit**

**SSac - SxwAt -
Sarsaparilla;
coarse-textured,
active floodplain
ecosystem unit**

**SScw - SxwAt -
Sarsaparilla;
coarse-textured,
warm aspect
ecosystem unit**

Description: SS

typically occurs
on fine-textured
parent materials
in receiving sites.

SSac occurs on
coarse-textured
fluvial parent
materials subject
to periodic
flooding. These
sites have
subhygric soil
moisture regimes
and
permesotrophic

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soil nutrient regimes.
SScw occurs only once in the study area in polygon #008. This site has calcareous seepage on a steep south aspect. The nutrients are richer than average and support a slightly different plant community than the 05 site series. Insufficient data precluded this unit from being separated as different site series.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SS2,SScw2,SSac2 herb	blue wildrye fireweed	trembling aspen bluejoint wild sarsaparilla	blue wildrye fireweed	bluejoint trembling aspen	grasses fireweed
SS3,SScw3,SSac3 Shrub/Herb	trembling aspen paper birch red-osier dogwood Douglas maple	prickly rose blue wildrye wild sarsaparilla	trembling aspen paper birch red-osier dogwood Douglas maple	blue wildrye	prickly rose blue wildrye red osier dogwood

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MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SS4,SScw4,SSac4 pole sapling	trembling aspen paper birch red-osier dogwood	hybrid white spruce Douglas maple prickly rose blue wildrye wild sarsaparilla	trembling aspen paper birch red-osier dogwood	Douglas maple blue wildrye	prickly rose red osier dogwood blue wildrye
SS5,SScw5,SSac5 young forest	trembling aspen paper birch red-osier dogwood	hybrid white spruce Douglas maple prickly rose blue wildrye wild sarsaparilla	trembling aspen paper birch red-osier dogwood	Douglas maple blue wildrye	prickly rose red osier dogwood blue wildrye
SS6,SScw6,SSac6 mature forest K24	hybrid white spruce Canada bunchberry step moss	trembling aspen paper birch red-osier dogwood blue wildrye wild sarsaparilla red-stemmed feathermoss <i>choke cherry</i> ¹ <i>spreading dogbane</i> <i>hemp dogbane</i> <i>red columbine</i>		paper birch red-osier dogwood blue wildrye	red osier dogwood blue wildrye
SS7,SScw7,SSac7 old forest	hybrid white spruce Canada bunchberry step moss	red-osier dogwood blue wildrye wild sarsaparilla red-stemmed feathermoss		red-osier dogwood blue wildrye	red osier dogwood blue wildrye
COMMENTS	¹ Species in italics are only known to occur on the SScw ecosystem unit				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2 - Kootenay Dry Mild Interior Douglas -fir Variant

TAw Talus; warm aspect ecosystem unit

Description: Very coarse textured active colluvial blankets. Very xeric moisture regime, little soil development.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
TAw1		open boulder fields with low cover of: foliose lichens crustose lichens			
TAk1		open boulder fields with low cover of: parsley fern mosses foliose lichens crustose lichens			parsley fern
COMMENTS	Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus field.				

6.2.1 IDFdm2 INTERPRETATION TABLES

AW Antelope-brush - Bluebunch wheatgrass

IDFdm2 AW	AW2- herb	AW3- shrub/he rb	AW4- pole sapling	AW5 young forest	AW6 mature forest	AW7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-little cover - existing moderate utilization by wild ungulate s -escape terrain must be adjacent to these sites for mule deer and bighorn sheep	-little cover - existing moderate utilization by wild ungulate s -escape terrain must be adjacent to these sites for mule deer and bighorn sheep	-as in AW2 -low snow intercepti on	-as in AW2 -dense canopy limits cover of forage species	-as in AW2	-as in AW2
HABITAT MANIPULATION CONSIDERATIONS	-maintain humus layers to avoid erosion and maintain soil moisture	-maintain humus layers to avoid erosion and maintain soil moisture	-as in AW2 -maintain clumpy nature of stand and develop moveme	-as in AW2	-as in AW2 -protect AW4 stands adjacent to AW2	-as in AW2 -protect and maintain old growth stands as

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2 AW	AW2- herb	AW3- shrub/he rb	AW4- pole sapling	AW5 young forest	AW6 mature forest	AW7 old growth
	-nutrient depletion after burning -slow rate of successi on	-nutrient depletion after burning -slow rate of successi on	nt corridors within the AW4 matrix			moveme nt corridors adjacent to escape terrain and AW2 units
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	- prescribe burn or manual brush in spring in 20 to25 yr cycles -stagger burns to create a mosaic of seral stages -do not burn sites with shallow or very	- prescribe burn or manual brush in spring in 20 to25 yr cycles -stagger burns to create a mosaic of seral stages -do not burn sites with shallow or very	- small patch burns within seral stage matrix every 20- 25 years -maintain cover within establish ed moveme nt corridors	as in AW2	-maintain as cover and moveme nt corridor -small group selection harvest in area where forage develop ment is a priority	-maintain as cover and moveme nt corridor

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IDFdm2 AW	AW2- herb	AW3- shrub/he rb	AW4- pole sapling	AW5 young forest	AW6 mature forest	AW7 old growth
	shallow soils -plant Douglas- fir to achieve above if necessar y - minimize grazing by horses, eliminate cattle	shallow soils -plant Douglas- fir to achieve above if necessar y - minimize grazing by horses, eliminate cattle				
Mule Deer	-as above	-as above	small patch burns within seral stage matrix every 20- 25 years -maintain cover within establis hed moveme	as in AW2	-as above	-as above

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IDFdm2						
AW	AW2-herb	AW3-shrub/herb	AW4-pole sapling	AW5 young forest	AW6 mature forest	AW7 old growth
			nt corridors -keep largest openings near cover			
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-not applicable	-not applicable	-maintain shrub cover adjacent to riparian areas	-maintain shrub cover adjacent to riparian areas	-maintain forested cover adjacent to riparian areas	-maintain forested cover adjacent to riparian areas
Mountain Goat	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable

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Red and blue listed species (see Table -)	-keep burns small and encourage the development of a matrix of several stages	-keep burns small and encourage the development of a matrix of several stages	-keep burns small -maintain seral stage matrix	as in AW2	-maintain mature forest cover	-maintain old growth forest cover
Furbearers	-as above -make sure areas adjacent to riparian areas or old growth are not burned	-as above -make sure areas adjacent to riparian areas or old growth are not burned	-as above -make sure areas adjacent to riparian areas or old growth are not burned	as in AW2	as above	as above
Fishery	-avoid disturbance to litter layer and do not cause any potential for soil erosion -make	-avoid disturbance to litter layer and do not cause any potential for soil erosion -make	--avoid disturbance to litter layer and do not cause any potential for soil erosion -make	--avoid disturbance to litter layer and do not cause any potential for soil erosion -make	avoid disturbance to litter layer and do not cause any potential for soil erosion -make	avoid disturbance to litter layer and do not cause any potential for soil erosion -make

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	sure areas adjacent to riparian are not disturbed	sure areas adjacent to riparian are not disturbed	sure areas adjacent to riparian are not disturbed	sure areas adjacent to riparian are not disturbed	sure areas adjacent to riparian are not disturbed	sure areas adjacent to riparian are not disturbed
Forest Harvest Activities	-none	-none	-none	-pre-commercial thinning where stands are large enough and creation of openings are necessary	-limited to small group selection harvest where stands are large enough and more forage is a priority	-none
Limitations to Forestry Activities	-no commercial timber -high wildlife value	-no commercial timber -high wildlife value	-no commercial timber -high wildlife value	-no commercial timber -high wildlife value	-no commercial timber -high wildlife value	-no commercial timber -high wildlife value

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ES Exposed Soil
 RO Rock outcrop
 TA Talus

IDFdm2	ES Exposed Soil	RO Rock outcrop	TA Talus
LIMITATIONS FOR PRESENT UNGULATE USE	-low cover of forage	-lack of preferred forage - accessibi lity	-lack of preferred forage - accessibi lity
HABITAT MANIPULATION CONSIDERATIONS	-highly erodible soils	- accessibi lity -stability -slow rate of successi on	- accessibi lity -stability -slow rate of successi on
HABITAT TREATMENT RECOMMENDATIONS FOR:			
Rocky Mountain Bighorn Sheep	- encourag e develop ment of moveme nt corridors	- encourag e develop ment of moveme nt corridors	- encourag e develop ment of moveme nt corridors

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IDFdm2	ES Exposed Soil	RO Rock outcrop	TA Talus
	between ES and adjacent forested habitats	between RO and adjacent forested habitats	between TA and adjacent forested habitats
Mule Deer	-as above	-as above	-as above
White-tail Deer	-no manage ment practical	-no manage ment practical	-no manage ment practical
Elk	- encourag e develop ment of moveme nt corridors between ES and adjacent forested habitats	- encourag e develop ment of moveme nt corridors between RO and adjacent forested habitats	- encourag e develop ment of moveme nt corridors between TA and adjacent forested habitats
Moose	-no treatment practical	-as above	-as above
Mountain Goat	- encourag e develop	- encourag e develop	- encourag e develop

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2	ES Exposed Soil	RO Rock outcrop	TA Talus
	ment of movement corridors between ES and adjacent forested habitats	ment of movement corridors between RO and adjacent forested habitats	ment of movement corridors between TA and adjacent forested habitats
Red and blue listed species (see Table -)	-no treatment practical	- minimize disturbance to nesting sites	- minimize disturbance to nesting sites
Furbearers (see Table)	- minimize disturbance to denning sites	- minimize disturbance to denning sites	- minimize disturbance to denning sites
Fishery	-avoid disturbance	-avoid disturbance	-avoid disturbance
Forest Harvest Activities	none	-none -maintain 100 m. wide movement	-none -maintain 100 m. wide movement

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2	ES Exposed Soil	RO Rock outcrop	TA Talus
		nt corridors adjacent to RO habitats	nt corridors adjacent to RO habitats
Limitations to Forestry Activities	-no value -highly erodible soils	-steep slopes -road construct ion	-steep slopes -road construct ion

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

DS Fd - Snowberry - Arrow-leaved balsamroot; typic

IDFdm2						
DS	DS2 herb	DS3 shrub/herb	DS4 pole sapling	DS5 young forest	DS6 mature forest	DS7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-access to escape terrain for bighorn sheep and mule deer	-access to escape terrain for bighorn sheep and mule deer	-as in DS2	-as in DS2	-as in DS2	-as in DS2
HABITAT MANIPULATION CONSIDERATIONS	-close access roads -maintain humus and litter layers to prevent erosion	-as in DS2	-as in DS2	-as in DS2	-mature stands of DS important for movement corridors -mature forests important for biodiversity	-old growth stands of DS important for movement corridors -old growth forests rare in study area and important for biodiversity
HABITAT TREATMENT RECOMMENDATIONS						

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DS	DS2 herb	DS3 shrub/herb	DS4 pole sapling	DS5 young forest	DS6 mature forest	DS7 old growth
Rocky Mountain Bighorn Sheep	-close access roads -spring burn every 20-25 years rotate location to maintain movement corridors and cover -do not burn shallow soils	-close access roads -spring burn every 20-25 years rotate location to maintain movement corridors and cover -do not burn shallow soils	-as in DS2	-as in DS2	-maintain mature forests as cover and part of movement corridors	-maintain old growth forests as cover and part of movement corridors
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-as above only in areas	-as above only in areas	-as above only in areas	-as above only in areas	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DS	DS2 herb	DS3 shrub/herb	DS4 pole sapling	DS5 young forest	DS6 mature forest	DS7 old growth
	adjacent to riparian sites	adjacent to riparian sites	adjacent to riparian sites	adjacent to riparian sites		
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-spring burn small patches every 20-25 years maintaining a matrix of open , shrubby and forested sites with abundant snags and coarse woody debris	-spring burn small patches every 20-25 years maintaining a matrix of open , shrubby and forested sites with abundant snags and coarse woody debris	-as in DS2	-as in DS2	-maintain mature forested sites with abundant snags and coarse woody debris	-maintain old growth forest sites with abundant snags and coarse woody debris
Furbearers	--spring burn small patches	--spring burn small patches	-as in DS2	-as in DS2	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DS	DS2 herb	DS3 shrub/herb	DS4 pole sapling	DS5 young forest	DS6 mature forest	DS7 old growth
	every 20-25 years maintaining a matrix of open, shrubby and forested sites with abundant snags and coarse woody debris -do not treat areas adjacent to riparian habitats	every 20-25 years maintaining a matrix of open, shrubby and forested sites with abundant snags and coarse woody debris -do not treat areas adjacent to riparian habitats				
Fishery	-close access roads -maintain humus and litter -do not burn 100 m from	-close access roads -maintain humus and litter -do not burn 100 m from	-as in DS2	-as in DS2	-do not disturb any sites with small water courses	-as in DS4

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DS	DS2 herb	DS3 shrub/herb	DS4 pole sapling	DS5 young forest	DS6 mature forest	DS7 old growth
	small water courses	small water courses				
Forest Harvest Activities	-none	-none	-none	-none	-none	-none
Limitations to Forestry Activities	-no trees	-no trees	-high wildlife values	-high wildlife values	- important part of forest ecosystem network -high cover value to wintering ungulates -high value to furbearers -high value to biodiversity	- important part of forest ecosystem network -high cover value to wintering ungulates -high value to furbearers -high value to biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

DT Douglas-fir - Pinegrass; typic

IDFdm2	DT 2 herb	DT3 shrub/herb	DT4 pole sapling	DT5 young forest	DT6 mature forest	DT7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-not adjacent to escape terrain for bighorn sheep and mule deer	-not adjacent to escape terrain for bighorn sheep and mule deer	-not adjacent to escape terrain for bighorn sheep and mule deer	-not adjacent to escape terrain for bighorn sheep and mule deer	-not adjacent to escape terrain for bighorn sheep and mule deer	-not adjacent to escape terrain for bighorn sheep and mule deer
HABITAT MANIPULATION CONSIDERATIONS	-maintain humus and litter layers to prevent erosion	-maintain humus and litter layers to prevent erosion	-maintain humus and litter layers to prevent erosion - keep matrix of dense trembling aspen stands to provide movement corridors between open	-maintain humus and litter layers to prevent erosion -keep matrix of dense trembling aspen stands provide movement corridors between open grassy	-keep mature forests and develop as part of matrix of movement corridors, high forage areas and escape terrain	-keep old growth forests as part of matrix - important element for biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DT	DT 2 herb	DT3 shrub/herb	DT4 pole sapling	DT5 young forest	DT6 mature forest	DT7 old growth
			grassy knolls and rocky cliff units	knolls and rocky cliff units		
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-close access roads -spring burn small patches every 20-25 years in areas with deep soil adjacent to escape terrain - presently in ideal state, begin treatment program in 20-25 yrs	-close access roads -spring burn small patches every 20-25 years in areas with deep soil adjacent to escape terrain	-close access roads -spring burn small patches every 20-25 years in areas with deep soil adjacent to escape terrain -begin treatment program immediately	-close access roads -spring burn small patches every 20-25 years in areas with deep soil adjacent to escape terrain -begin treatment program in 10 yrs	-close access roads -no habitat manipulation	-close access roads -no habitat manipulation

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DT	DT 2 herb	DT3 shrub/herb	DT4 pole sapling	DT5 young forest	DT6 mature forest	DT7 old growth
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	no management practical	no management practical	no management practical	no management practical	no management practical	no management practical
Mountain Goat	-close access roads -spring burn small patches every 20-25 years adjacent to RO or TA habitat classes	-close access roads -spring burn small patches every 20-25 years adjacent to RO or TA habitat classes	-as in DT2	-as in DT2	-no treatment	-no treatment
Red and blue listed species (see Table -)	-close access roads -spring burn	-close access roads -spring burn	-as in DT2	-as in DT2	-no treatment	-no treatment

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DT	DT 2 herb	DT3 shrub/ herb	DT4 pole sapling	DT5 young forest	DT6 mature forest	DT7 old growth
	small patches every 20-25 years -retain snags and coarse woody debris	small patches every 20-25 years -retain snags and coarse woody debris				
Furbearers	-retain snags and coarse woody debris	-retain snags and coarse woody debris	-as in DT2	-as in DT2	-no treatment	-no treatment
Fishery	-avoid disturbance to litter and humus layers -avoid burning within 100 m of small water courses	-avoid disturbance to litter and humus layers -avoid burning within 100 m of small water courses	-as in DT2	-as in DT2	-no treatment	-no treatment
Forest Harvest Activities	-none	-none	-pre-commerc	-pre-commerc	-none	-none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DT	DT 2 herb	DT3 shrub/herb	DT4 pole sapling	DT5 young forest	DT6 mature forest	DT7 old growth
			ial thinning of small patches	ial thinning of small patches		
Limitations to Forestry Activities	-no trees	-no trees	-access -road construction on fine textured soils -high wildlife values	-access -road construction on fine textured soils -high wildlife values	-access -road construction on fine textured soils -wildlife value as movement corridor higher than forestry value	-access -road construction on fine textured soils -old growth value for biodiversity higher than forestry values -wildlife value as movement corridor higher than forestry value

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

DTk FdPI - Pinegrass - twinflower; cool aspect

IDFdm2						
DTk	DTk2 herb	DTk3 shrub/he rb	DTk4 pole sapling	DTk5 young forest	DTk6 mature forest	DTk7 old forest
LIMITATIONS FOR PRESENT UNGULATE USE	-low cover of preferred forage species -cool aspect	-low cover of preferred forage species -cool aspect	-dense canopy -cool aspect	-dense canopy -cool aspect	-low cover of forage species	-low cover of forage species
HABITAT MANIPULATION CONSIDERATIONS	-steep slopes -unstable soils subject to erosion	-as in DTK2	-as in DTK2	-as in DTK2	-as in DTK2	-as in DTK2
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-allow to grow to mature forest or old growth stage	-as in DTK2	-as in DTK2	-as in DTK2	-no manipulation	-no manipulation
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as	-as	-as	-as	-as	-as

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DTk	DTk2 herb	DTk3 shrub/he rb	DTk4 pole sapling	DTk5 young forest	DTk6 mature forest	DTk7 old forest
	above	above	above	above	above	above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-as above	-as above	-as above	-as above	-as above	-as above
Mountain Goat	not applicabl e	not applicabl e	not applicabl e	not applicabl e	not applicabl e	not applicabl e
Red and blue listed species (see Table -)	-allow to grow to mature forest or old growth stage	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2
Furbearers	as above	as in DTk2	as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2
Fishery	as above	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2
Forest Harvest Activities	none	none	none	none	none	none
Limitations to Forestry Activities	-steep slopes -erodible, unstable soils -high value to fisheries	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2	-as in DTk2

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
DTk	DTk2 herb	DTk3 shrub/he rb	DTk4 pole sapling	DTk5 young forest	DTk6 mature forest	DTk7 old forest
	and red and blue listed species					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SP FdLw - Spruce - Pinegrass; typic

IDFdm2	SP2 herb	SP3 shrub/ herb	SP4 pole sapling	SP5 young forest	SP6 mature forest	SP7 old growth forest
LIMITATIONS FOR PRESENT UNGULATE USE	-isolated patches	-isolated patches	-road access -poor cover, deciduous trees do not intercept much snow	-road access -poor cover, deciduous trees do not intercept much snow	-road access	
HABITAT MANIPULATION CONSIDERATIONS	-as in SP2 - encourage development of movement corridors by leaving later seral stages and planting western larch and	-sensitive moist soils - encourage development of movement corridors by leaving later seral stages and planting western	as in SP2	as in SP2	-as in SP2	-as in SP2

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SP	SP2 herb	SP3 shrub/ herb	SP4 pole sapling	SP5 young forest	SP6 mature forest	SP7 old growth forest
	Douglas-fir	larch and Douglas-fir				
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-maintain habitat diversity nearby, especially when unit is near migration routes or lambing grounds	-spring burn or manual brush small patches every 20-25 years - rotate burning to encourage mosaic of seral stages with mature forested or old growth movement corridors	-as in SP2	-as in SP2	-maintain as movement corridor	-maintain as movement corridor
Mule Deer	-none	- as above	-as above	-as above	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SP	SP2 herb	SP3 shrub/ herb	SP4 pole sapling	SP5 young forest	SP6 mature forest	SP7 old growth forest
White-tail Deer	-none	-as above	-as above	-as above	-as above	-as above
Elk	-none	-as above	-as above	-as above	-as above	-as above
Moose	-none	-as above when area is adjacent to riparian habitat	as in SP2	-as in SP2	-as in SP2	-as in SP2
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-maintain heterogeneity	-spring burn small patches every 20-25 years -rotate burns to encourage mosaic of seral stages with mature forested	-as in SP2	-as in SP2	-maintain mature forested stands protect snags and coarse woody debris	-maintain old growth stands, protect snags and coarse woody debris

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2	SP2 herb	SP3 shrub/ herb	SP4 pole sapling	SP5 young forest	SP6 mature forest	SP7 old growth forest
		or old growth stands with abundant wildlife trees and coarse woody debris (western larch especiall y desirable species for cavity nesters)				
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	-protect humus and litter layers from disturbance	-protect humus and litter layers from disturbance no burning 100 m from small	as in SP2	as in SP2	-maintain mature forests without disturbance	-maintain old growth forests without disturbance

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SP	SP2 herb	SP3 shrub/ herb	SP4 pole sapling	SP5 young forest	SP6 mature forest	SP7 old growth forest
		water courses				
Forest Harvest Activities	none	none	-small group selection cut of paper birch for firewood	-small group selection cut of paper birch or western arch	none	none
Limitations to Forestry Activities	-no trees	-no trees	-fine textured compactible soils	-fine textured compactible soils	-high value for wildlife and biodiversity	-as in SP5 -high value for wildlife and biodiversity

SS SxwAt - Sarsaparilla; typic

IDFdm2						
SS	SS2 herb	SS3 shrub/ herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
LIMITATIONS FOR PRESENT UNGULATE USE	-isolated patches	-isolated patches	-road access -poor cover,	-road access -poor cover,	-road access	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SS	SS2 herb	SS3 shrub/ herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
			deciduou s trees do not intercept much snow	deciduou s trees do not intercept much snow		
HABITAT MANIPULATION CONSIDERATIONS	-as in SS2 - encourag e develop ment of moveme nt corridors by leaving later seral stages	-sensitive moist soils - encourag e develop ment of moveme nt corridors by leaving later seral stages	as in SS	as in SS2	-as in SS2	-as in SS2
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	no treatment practical	no treatment practical	no treatment practical	no treatment practical	-maintain as moveme nt corridor	-maintain as moveme nt corridor

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SS	SS2 herb	SS3 shrub/ herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
Mule Deer	-none	- as above	-as above	-as above	-as above	-as above
White-tail Deer	-none	-as above	-as above	-as above	-as above	-as above
Elk	-none	-as above	-as above	-as above	-as above	-as above
Moose	-none	-maintain mosaic of shrubby habitat	as in SS2	-as in SS2	-as in SS2	-as in SS2
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-maintain heterogeneity	-maintain older stands	-as in SS2	-as in SS2	-maintain mature forested stands protect snags and coarse woody debris	-maintain old growth stands, protect snags and coarse woody debris
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	-protect humus and litter	-protect humus and litter	as in SS2	as in SS2	-maintain mature forests	-maintain old growth

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

IDFdm2						
SS	SS2 herb	SS3 shrub/ herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth forest
	layers from disturbance	layers from disturbance			without disturbance	forests without disturbance
Forest Harvest Activities	none	none	-none	-none	none	none
Limitations to Forestry Activities	-no trees	-no trees	-moist sites	-moist sites	-high value for wildlife and biodiversity	-as in SS -high value for wildlife and biodiversity

6.3 MSdk - Ecosystem units

MSdk - Dry Cool Montane Spruce Subzone

ESw Exposed Soil ecosystem unit

Description: Exposed mineral soils generally on glaciofluvial, glaciolacustrine or colluvial slopes with warm aspects. Less than 10% coverage of vegetation.

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk/03 - Dry Cool Montane Spruce Subzone

- LJ PI - Juniper - pinegrass; typic ecosystem unit**
- LJc PI - Juniper - pinegrass; coarse-textured ecosystem unit**
- LJr PI - Juniper - pinegrass; ridged ecosystem unit**
- LJrs PI - Juniper - pinegrass; ridged, shallow soil ecosystem unit**
- LJrv PI - Juniper - pinegrass; ridged, shallow soil ecosystem unit**
- LJs PI - Juniper - pinegrass; shallow soil ecosystem unit**
- LJv PI - Juniper - pinegrass; very shallow soil ecosystem unit**

Description: LJ typically occurs on steep warm aspects with deep, medium-textured soils. Morainal and colluvial parent materials are common. Xeric to subxeric soil moisture regimes are typical on these sites.

LJc occurs on similar site with coarse-textured soils

LJr occurs on gently sloping ridges

LJrs occurs on gently sloping ridges with shallow soils

LJrv occurs on gently sloping ridges with very shallow soils

LJs occurs on typic sites with shallow soils

LJv occurs on typic sites with very shallow soils

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
LJ2,LJc2, LJr2, LJrs2, LJrv2, LJs2, LJv2 herb	kinnikinnick	fringed aster	kinnikinnick	fringed aster	kinnikinnick
LJ3,LJc3, LJr3, LJrs3, LJrv3, LJs3, LJv3 shrub /herb 964342,C99,CV15	shrubby stands of: common juniper kinnikinnick	Douglas-fir lodgepole pine soopolallie saskatoon birch-leaved spirea pinegrass		Douglas-fir lodgepole pine saskatoon soopolallie fringed aster	soopolallie saskatoon kinnikinnick

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		showy aster			
LJ4, LJc4, LJr4, LJrs4, LJrv4, LJs4, LJv4 pole -sapling	clumpy stands of: lodgepole pine Douglas-fir trembling aspen common juniper	paper birch saskatoon birch-leaved spirea common juniper kinnikinnick pinegrass showy aster	Douglas-fir trembling aspen	saskatoon paper birch showy aster	saskatoon kinnikinnick
LJ5, LJc5, LJr5, LJrs5, LJrv5, LJs5, LJv5 young forest 964345C100,C101,C105, CV10, CV7, K5	clumpy stands of: lodgepole pine Douglas-fir common juniper	paper birch trembling aspen saskatoon birch-leaved spirea common juniper kinnikinnick pinegrass showy aster	Douglas-fir	paper birch trembling aspen saskatoon showy aster	soopolallie saskatoon kinnikinnick bluebunch wheatgrass
LJ6, LJc6, LJr6, LJrs6, LJrv6 LJs6, LJv6 mature forest C103,C104, CV13, K10, K13, K9	open stands of: Douglas-fir	lodgepole pine Douglas maple soopolallie saskatoon birch-leaved spirea common juniper kinnikinnick pinegrass showy aster bluebunch wheatgrass lichens	Douglas-fir	soopolallie saskatoon showy aster bluebunch wheatgrass	soopolallie saskatoon kinnikinnick bluebunch wheatgrass
LJ7, LJc7, LJr7, LJrs7, LJrv7, LJs7, LJv7	open stands of: Douglas-fir	Douglas maple soopolallie saskatoon	Douglas-fir	soopolallie saskatoon showy aster	soopolallie saskatoon kinnikinnick

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
old forest 964308, CV12		birch-leaved spirea common juniper kinnikinnick pinegrass showy aster bluebunch wheatgrass lichens		bluebunch wheatgrass	bluebunch wheatgrass
COMMENTS	bluebunch wheatgrass is only present on shallow soils and strong south aspects				

Figure 6. MSdk/02: LJs3 - PI - Juniper - Pinegrass; shallow soil ecosystem unit

MSdk/04 - Dry Cool Montane Spruce Subzone					
LP PI - Oregon grape - Pinegrass ecosystem unit					
LPc PI - Oregon grape - Pinegrass; coarse-textured soil ecosystem unit					
LPcs PI - Oregon grape - Pinegrass; coarse-textured, shallow soil ecosystem unit					
LPs PI - Oregon grape - Pinegrass; shallow soil ecosystem unit					
LPsw PI - Oregon grape - Pinegrass; shallow soil, warm aspect ecosystem unit					
LPw PI - Oregon grape - Pinegrass; warm aspect ecosystem unit					
Description: LP typically occurs on gentle to moderately sloping, deep medium-textured soils. Occurs on morainal parent materials most frequently with subxeric to mesic soil moisture regimes.					
LPc occurs on typic sites with coarse textured soils					
LPcs occurs on typic sites with coarse textured, shallow soils					
LPs occurs on typic sites with shallow soils					
LPsw occurs on typic sites with shallow soils with warm aspects.					
LPw occurs on warm aspects that that have a directional exposure between 200° and 280° azimuth					

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
LP2, LPc2, LPcs2, LPs2, LPsw2 LPw2 herb	fireweed showy aster		fireweed showy aster	heart-leaved arnica	fireweed

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
LP3, LPc3,LPcs3, LPs3,LPsw3 LPw3 shrub/herb C97,C116,C117,K7	dense shrubby stands of: snowberry fireweed showy aster	lodgepole pine trembling aspen Douglas maple saskatoon	fireweed showy aster	trembling aspen Douglas maple saskatoon	saskatoon
LP4, LPc4, LPcs4,LPs4,LPsw4 LPw4 pole sapling 964309,	dense young forests of: lodgepole pine pinegrass	Douglas-fir trembling aspen Douglas maple saskatoon tall Oregon-grape showy aster red-stemmed feathermoss	Douglas-fir lodgepole pine	trembling aspen Douglas maple saskatoon tall Oregon-grape showy aster	saskatoon tall Oregon-grape
LP5,LPc5,LPcs5, LPs5,LPsw5, LPw5 young forest C102,C119,C120,CV8	dense young forests of: Douglas-fir pinegrass	lodgepole pine Douglas maple saskatoon tall Oregon-grape showy aster red-stemmed feathermoss	Douglas-fir	lodgepole pine Douglas maple saskatoon tall Oregon-grape showy aster	saskatoon tall Oregon-grape
LP6, LPc6, LPcs6,LPs6,LPsw6, LPw6 mature forest CV9	closed canopy stands of: Douglas-fir pinegrass	Douglas maple saskatoon showy aster tall Oregon-grape red-stemmed feather moss	Douglas-fir	Douglas maple saskatoon showy aster tall Oregon-grape	saskatoon tall Oregon-grape
LP7, LPc7,LPcs7, LPs7,LPsw7, LPw7 old forest	closed canopy stands of: Douglas-fir pinegrass	Douglas maple saskatoon showy aster tall Oregon-grape red-stemmed feather moss	Douglas-fir	Douglas maple saskatoon showy aster tall Oregon-grape	saskatoon tall Oregon-grape

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
K8,K11					
COMMENTS	herb and moss layers are better developed in all late seral structural stages on cool aspect modified units				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk - Dry Cool Montane Spruce Variant

ROw - Rock outcrop; warm aspect ecosystem unit

ROk - Rock outcrop; cool aspect ecosystem unit

Description: Rock outcroppings with surficial material deposits, may have some fine textured material as a result of weathering. Very xeric to xeric moisture regime. Less than 10% vegetation.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
ROw		open rock with low cover of: grasses foliose lichens fruticose lichens		grasses	grasses
ROk		open rock with low cover of: mosses foliose lichens fruticose lichens			
COMMENTS	Floristics can be very diverse on these sites				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk - Dry Cool Montane Spruce Variant

RUw - Rubble; warm aspect ecosystem unit

RUk - Rubble; cool aspect ecosystem unit

Description: Very thin colluvial veneers overlying bedrock. Generally less than 10% vegetation cover.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
RUw1		open rubble with low cover of: grasses foliose lichens fruticose lichens		grasses	grasses
RUk1		open rubble with low cover of: mosses foliose lichens fruticose lichens			
COMMENTS	Floristics can be very diverse on these sites				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk/01 - Dry Cool Montane Spruce Subzone

- SG Sxw - Soopolallie - Grouseberry; typic ecosystem unit**
- SGk Sxw - Soopolallie - Grouseberry; cool aspect ecosystem unit**
- SGks Sxw - Soopolallie - Grouseberry; cool aspect, shallow soil ecosystem unit**
- SGkv Sxw - Soopolallie - Grouseberry; cool aspect, very shallow soil ecosystem unit**
- SGs Sxw - Soopolallie - Grouseberry; shallow soil ecosystem unit**
- SGsw Sxw - Soopolallie - Grouseberry; warm aspect, shallow soil ecosystem unit**

Description: SG typically occurs on sites with gentle slopes and deep medium-textured soils. Commonly found on morainal parent materials with subxeric to subhygric soil moisture regimes.

SGk occurs on morainal or colluvial blankets with steep to moderately sloping cool aspects. Soil moisture can vary from submesic to mesic, with mesotrophic nutrient regimes.

SGks occurs on cool aspects with shallow soils.

SGkv occurs on sites with cool aspects and very shallow soils.

SGs occurs on sites with shallow soils.

SGsw occurs on sites warm aspects and shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SG2,SGk2, SGks2, SGkv2, SGs2,SGsw2 herb CV14	fireweed fuzzy-spiked wildrye	showy aster	fireweed	showy aster	fireweed
SG3,SGk3, SGks3, SGkv3, SGs3,SGsw3 Shrub/Herb 964307, CV5	dense shrub cover of: Douglas maple paper birch birch-leaved spirea	lodgepole pine grouseberry ¹ highbush cranberry ² soopolallie false azalea thimbleberry showy aster	Douglas maple paper birch	highbush cranberry soopolallie showy aster fuzzy-spiked wildrye thimbleberry lodgepole pine	highbush cranberry thimbleberry soopolallie grouseberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SG		twinflower fuzzy-spiked wildrye			
SG4, SGk4, SGks4, SGkv4, SGs4,SGsw4	closed canopy forests of: lodgepole pine red-stemmed feathermoss step moss	Douglas-fir hybrid white spruce highbush cranberry soopolallie false azalea grouseberry ¹ heart-leaved arnica showy aster twinflower	lodgepole pine	Douglas-fir highbush cranberry soopolallie showy aster heart-leaved arnica	highbush cranberry soopolallie grouseberry
SG5, SGk5, SGks5, SGkv5, SGs5,SGsw5	closed canopy forests of: hybrid white spruce subalpine fir red-stemmed feathermoss step moss	Douglas-fir highbush cranberry ² soopolallie false azalea grouseberry ¹ heart-leaved arnica showy aster twinflower	subalpine fir	Douglas-fir highbush cranberry ² soopolallie showy aster heart-leaved arnica	soopolallie highbush cranberry grouseberry
SG6, SGk6, SGks6, SGkv6, SGs6SGsw6	closed canopy forests of: hybrid white spruce subalpine fir red-stemmed feathermoss step moss	Douglas-fir highbush cranberry ² soopolallie false azalea grouseberry ¹ heart-leaved arnica showy aster twinflower	subalpine fir	Douglas-fir highbush cranberry ² soopolallie showy aster heart-leaved arnica	soopolallie highbush cranberry grouseberry
SG7, SGk7, SGks7, SGkv7, SGs7,SGsw7	closed canopy forests of:	Douglas-fir highbush cranberry ²	subalpine fir	Douglas-fir highbush cranberry ²	highbush cranberry soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SG	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
old forest	hybrid white spruce subalpine fir red-stemmed feathermoss step moss	soopolallie false azalea grouseberry ¹ Canada bunchberry showy aster twinflower		soopolallie showy aster heart-leaved arnica	grouseberry
COMMENTS	¹ grouseberry is dominant on cool aspects ² cool aspects do not have highbush cranberry				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk/05 - Dry Cool Montane Spruce Subzone

- SS - Sxw - Soopolallie - Snowberry; typic ecosystem unit**
- SSg - Sxw - Soopolallie - Snowberry; gullied ecosystem unit**
- SSgs - Sxw - Soopolallie - Snowberry; shallow soil,gullied ecosystem unit**
- SSk - Sxw - Soopolallie - Snowberry; cool aspect ecosystem unit**
- SSs - Sxw - Soopolallie - Snowberry; shallow soil ecosystem unit**

Description: **SS** typically occurs on gentle,lower slope receiving sites with medium textured soils. This unit is found on all parent materials in toe slope position with subhygric soil moisture regimes. Mor humus forms are common.

SSg occurs on mid-slope gullies.

SSgs occurs on mid-slope gullies with shallow soil.

SSk occurs on cool aspects.

SSs occurs on shallow soils.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SS2,SSg2,SSgs2,SSk2,SSs2 herb	fireweed	paper birch	fireweed	paper birch	fireweed
SS3,SSg3,SSgs3,SSk3,SSs3 shrub/herb	shrubby sites consisting of: soopolallie Sitka alder paper birch false azalea black twinberry	lodgepole pine Canada bunchberry heart-leaved arnica red-stemmed feathermoss knight's plume moss snowberry	paper birch black twinberry	lodgepole pine heart-leaved arnica	black twinberry soopolallie
SS4,SSg4,SSgs4,SSk4,SSs4	closed young forests of:	hybrid white spruce subalpine fir	lodgepole pine paper birch	subalpine fir black twinberry	black twinberry soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SS					
pole sapling	lodgepole pine paper birch red-stemmed feathermoss	Sitka alder false azalea black twinberry Canada bunchberry heart-leaved arnica soopolallie snowberry		heart-leaved arnica	
SS5,SSg5,SSgs5,SSk5,SSs5 young forest CV11	young forests of: hybrid white spruce subalpine fir red-stemmed feathermoss	lodgepole pine paper birch Sitka alder false azalea black twinberry Canada bunchberry heart-leaved arnica soopolallie	subalpine fir	paper birch black twinberry heart-leaved arnica	black twinberry soopolallie
SS6,SSg6,SSgs6,SSk6,SSs6 mature forest	closed forests of: hybrid white spruce subalpine fir red-stemmed feathermoss	lodgepole pine false azalea black twinberry Canada bunchberry heart-leaved arnica soopolallie snowberry	subalpine fir	black twinberry heart-leaved arnica	black twinberry soopolallie
SS7,SSg7,SSgs7,SSk7,SSs7 old forest	forests of: hybrid white spruce subalpine fir red-stemmed feathermoss	false azalea black twinberry Canada bunchberry heart-leaved arnica soopolallie snowberry	subalpine fir	black twinberry heart-leaved arnica	black twinberry soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SS	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
COMMENTS					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk/02 - Dry Cool Montane Spruce Subzone

- SW** Saskatoon - Bluebunch wheatgrass; ecosystem unit
- SWkv** Saskatoon - Bluebunch wheatgrass; cool aspects, very shallow ecosystem unit
- SWs** Saskatoon - Bluebunch wheatgrass; shallow ecosystem unit
- SWv** Saskatoon - Bluebunch wheatgrass; very shallow ecosystem unit
- SWrs** Saskatoon - Bluebunch wheatgrass; ridge, shallow ecosystem unit
- SWrv** Saskatoon - Bluebunch wheatgrass; ridge, very shallow ecosystem unit

Description: **SW** typically occurs on steep warm aspects with deep medium textured soils
SWkv occurs on steep cool (easterly) aspects with very shallow soils. These sites are generally represented by open Fd stands with shrubby understory and subxeric to xeric soil moisture regimes.
SWs occurs on typic sites with shallow soils.
SWv occurs on typic sites with very shallow soils
SWrs occurs on typic sites on ridges with shallow soils
SWrv occurs on typic sites on ridges with very shallow soils

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
SWr2,SWkv2,SWs2, SWv2,SWrs2,SWrv2 herb	Canada bluegrass	Douglas maple bluebunch wheatgrass junegrass western fescue	Canada bluegrass	Douglas maple	Douglas maple Canada bluegrass
SWr3,SWkv3,SWs3, SWv3,SWrs3,SWrv3 shrub/herb C107,C121	low shrubs dominated by: trembling aspen	Douglas-fir Douglas maple common juniper bluebunch wheatgrass junegrass western fescue	trembling aspen	Douglas-fir Douglas maple soopolallie	soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SWs	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
		lichens			
SWr4,SWkv4,SWs4, SWv4,SWrs4,SWrv4 pole sapling	very open young forests of: Douglas-fir	trembling aspen Douglas maple saskatoon common juniper bluebunch wheatgrass junegrass western fescue lichens	Douglas-fir	trembling aspen Douglas maple saskatoon	saskatoon soopolallie
SWr5,SWkv5,SWs5, SWv5,SWrs5,SWrv5 young forest	very open forests of: Douglas-fir	trembling aspen Douglas maple saskatoon common juniper bluebunch wheatgrass junegrass western fescue lichens	Douglas-fir	trembling aspen Douglas maple saskatoon	saskatoon soopolallie
SWr6,SWkv6,SWs6 SWv6,SWrs6,SWrv6 mature forest	very open forests of: Douglas-fir	trembling aspen Douglas maple saskatoon common juniper bluebunch wheatgrass junegrass western fescue lichens	Douglas-fir	trembling aspen Douglas maple saskatoon	saskatoon soopolallie
SWr7,SWkv7,SWs7, SWv7,SWrs7,SWrv7	very open forests of: Douglas-fir	Douglas maple saskatoon common juniper	Douglas-fir	Douglas maple saskatoon	saskatoon soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL SWs	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
old growth		bluebunch wheatgrass junegrass western fescue lichens			
COMMENTS	-late seral structural stages of this type have a very similar appearance -SWv sites may structurally be in a shrub stage for many years.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk - Dry Cool Montane Spruce Subzone

TAk Talus; cool aspect ecosystem unit

TAw Talus; warm aspect ecosystem unit

Description: Very coarse textured active colluvial veneers or blankets. Very xeric moisture regime, little soil development.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
TAw		open boulder fields with low cover of: foliose lichens crustose lichens			
TAk		open boulder fields with low cover of: parsley fern foliose lichens crustose lichens			parsley fern
COMMENTS	Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus field.				

6.3.1 MSdk - Interpretation Tables

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ES Exposed Soil
 RO Rock outcrop
 TA Talus

MSdk	ES Exposed Soil	RO - Rock outcrop ecosyste m unit	RU Rubble	TA - Talus slope ecosyste m unit
LIMITATIONS FOR PRESENT UNGULATE USE	-low cover of forage	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -TAw has higher value to bighorn sheep and mtn goat than TAk	-low forage cover -TAw has higher value to bighorn sheep and mtn goat than TAk
HABITAT MANIPULATION CONSIDERATIONS	-highly erodible soils	-steep slopes -low productio n -slow successi on	-as in RO	-as in RO
HABITAT TREATMENT RECOMMENDATIONS				
Rocky Mountain Bighorn Sheep	- encourag e develop ment of	-none -facilitate the develop ment of	-none -facilitate the develop ment of	-none -facilitate the develop ment of

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk	ES Exposed Soil	RO - Rock outcrop ecosyste m unit	RU Rubble	TA - Talus slope ecosyste m unit
	moveme nt corridors between ES and adjacent forested habitats	moveme nt corridors adjacent to RO	moveme nt corridors adjacent to RU	moveme nt corridors adjacent to TA
Mule Deer	-as above	-as above	-as above	-as above
White-tail Deer	-no manage ment practical	-not applicabl e	-not applicabl e	-not applicabl e
Elk	- encourag e develop ment of moveme nt corridors between ES and adjacent forested habitats	-none -facilitate the develop ment of moveme nt corridors adjacent to RO	-as in RO	-as in RO
Moose	-no treatment practical	-none	-none	-none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk	ES Exposed Soil	RO - Rock outcrop ecosyste m unit	RU Rubble	TA - Talus slope ecosyste m unit
Mountain Goat	- encourage development of movement corridors between ES and adjacent forested habitats	-none -facilitate the development of movement corridors adjacent to RO	-as in RO	-as in RO
Red and bluelisted species (see Table -)	-no treatment practical	--protect snags and coarse woody debris	-protect snags and coarse woody debris	-protect snags and coarse woody debris
Furbearers	- minimize disturbance to denning sites	-as above	-as above	-as above
Fishery	-avoid disturbance	-avoid disturbance	-avoid disturbance	-avoid disturbance
Forest Harvest Activites	none	none	none	none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk	ES Exposed Soil	RO - Rock outcrop ecosyste m unit	RU Rubble	TA - Talus slope ecosyste m unit
Limitations to Forestry Activities	-no value -highly erodible soils	-steep slopes -sensitive sites	as in RO	as in RO

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

LJ PI - Juniper - pinegrass; typic

MSdk	LJ2 herb	LJ3 shrub/herb	LJ4 pole sapling	LJ5 young forest	LJ6 mature forest	LJ7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-no cover steep slopes unstable soils	-no cover -steep slopes -unstable soils	-steep slopes -unstable soils	as in LJ2	-low cover of forage species -steep slopes	-as in LJ6
HABITAT MANIPULATION CONSIDERATIONS	-do not manipulate	-steep slopes -erodible soils -access poor	-as in LJ3	-as in LJ3	-rare on landscape - important cover areas and movement corridors	-as in LJ6
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-none	-spring burn every 20-25 years	-as in LJ3	- patchy spring burn every 20-25 to facilitate the development of a	-do not manipulate, maintain as cover and movement corridor	-as in LJ6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LJ	LJ2 herb	LJ3 shrub/herb	LJ4 pole sapling	LJ5 young forest	LJ6 mature forest	LJ7 old growth
				seral stage matrix		
Mule Deer	-none	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-none	-spring burning would facilitate forage for animals who may find themselves in these habitats	as in LJ3	as in LJ3	- as above	-as above
Elk	-none	-spring burn every 20-25 years	as in LJ3	as in LJ3	-as above	-as above
Moose	-none	spring burn every 20-25 years	as in LJ3	as in LJ3	-as above	-as above
Mountain Goat	-none	spring burn every 20-25 years	as in LJ3	as in LJ3	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LJ	LJ2 herb	LJ3 shrub/herb	LJ4 pole sapling	LJ5 young forest	LJ6 mature forest	LJ7 old growth
		in areas adjacent to RO and TA habitats				
Red and blue listed species (see Table -)	maintain habitat diversity	-protect snags and coarse woody debris	-as in LJ3	-as in LJ3	-as above	-as above
Furbearers	-as above	-as above	-as above	-as above	-as above	as above
Fishery	-do not treat within 100 m of water bodies	-do not treat within 100 m of small water courses -protect humus and litter layers	-as in LJ3	-as in LJ3	-as above	-as above
Forest Harvest Activities	none	none	none	-small patch manual brushing	none	none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LJ	LJ2 herb	LJ3 shrub/herb	LJ4 pole sapling	LJ5 young forest	LJ6 mature forest	LJ7 old growth
Limitations to Forestry Activities	no trees	-steep slopes -unstable soils -high wildlife values	-as in LJ3	-as in LJ3	-steep slopes -unstable soils -high wildlife value	-as in LJ6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

LP PI - Oregon grape - pinegrass; typic

LPw PI - Oregon grape - pinegrass; warm aspect

MSdk LP	LP2 herb	LP3 shrub/herb	LP4 pole sapling	LP5 young forest	LP6 mature forest	LP7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-no cover late snow retention	-no cover -low snow retention	-as in LP2	-low snow interception	-lack of high cover of preferred forage species	-as in LP6
HABITAT MANIPULATION CONSIDERATIONS	do not manipulate	-soil erosion -nutrient depletion after burning	-as in LP2	-as in LP2	-maintain as cover and movement corridors	-maintain as cover and movement corridors
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	no treatment	-spring burn every 20-25 years in areas adjacent to escape terrain	-as in LP2	-as in LP2	maintain as cover and movement corridors	as in LP4
Mule Deer	no treatment	as above	as above	as above	as above	as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LP	LP2 herb	LP3 shrub/herb	LP4 pole sapling	LP5 young forest	LP6 mature forest	LP7 old growth
White-tail Deer	no treatment	-spring burn every 20-25 years in a patchy mosaic of seral stages	-as in LP2	-as in LP2	as above	as above
Elk	no treatment	-as above	-as above	-as above	-as above	-as above
Moose	no treatment	-spring burn every 20-25 years in areas adjacent to riparian or valley floor habitats	-as in LP2	-as in LP2	-as in LP2	-as in LP1
Mountain Goat	no treatment	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	maintain habitat diversity	spring burn every 20-25 years in a	as in LP2	as in LP2	maintain mature forests, protect snags	as in LP4

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LP	LP2 herb	LP3 shrub/herb	LP4 pole sapling	LP5 young forest	LP6 mature forest	LP7 old growth
		patchy mosaic of seral stages -protect snags and coarse woody debris			and coarse woody debris	
Furbearers	as above	protect snags and coarse woody debris	as in LP2	as in LP2	as above	as above
Fishery	as above	-do not treat within 100 m of small water courses -protect humus and litter layers	as in LP2	as in LP2	maintain mature forests protect humus and litter layers	maintain old growth forests, protect humus and litter layers
Forest Harvest Activities	none	manual brushing in small patches	as in LP2	as in LP2	-small group selection with	none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk LP	LP2 herb	LP3 shrub/herb	LP4 pole sapling	LP5 young forest	LP6 mature forest	LP7 old growth
					opening of 0.7 to 2.4 ha in size -maintain contiguous areas of mature forest for cover and movement corridors	
Limitations to Forestry Activities	no trees	no trees	young trees	young trees	- maintenance of contiguous mature forest matrix -do not disturb humus and litter layers -limit new road and skid trail construct	-rare on landscape -high value to biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
LP	LP2 herb	LP3 shrub/herb	LP4 pole sapling	LP5 young forest	LP6 mature forest	LP7 old growth
					ion	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SHac Sxw - Dogwood - Horsetail

MSdk SH	SH2 herb	SH3 shrub/ herb	SH4 pole sapling	SH5 young forest	SH6 mature forest	SH7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-limited within study area	-limited within study area	-as in SH2	-as in SH2	-as in SH2	-as in SH2
HABITAT MANIPULATION CONSIDERATIONS	-wet erodible soils frequent flooding difficult to burn	-wet erodible soils -frequent flooding -difficult to burn	-as in SH2	-as in SH2	-do not manipulate -high values for biodiversity	-as SH6
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	none	not applicable	not applicable	not applicable	not applicable	not applicable
Mule Deer	plant shrubs	manual brushing every 20-25 years	-as in SH2	-manual brushing every 20-25 years within a cover matrix of young, mature and old growth	-do not manipulate -high values for cover and biodiversity	-as in SH4

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SH	SH2 herb	SH3 shrub/herb	SH4 pole sapling	SH5 young forest	SH6 mature forest	SH7 old growth
				forest habitats		
White-tail Deer	none	as above	as above	as above	as above	as above
Elk	none	-as above	-as above	-as above	-as above	-as above
Moose	plant shrubs	as above	as above	as above	as above	as above
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-maintain habitat diversity	-do not treat, maintain and protect snags and coarse woody debris	-as in SH2	-as in SH2	as in SH2	as in SH2
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	as above	as above	as above	as above	as above	as above
Forest Harvest Activities	none	none	none	-small patches of pre-commercial thinning	-none	none

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk SH	SH2 herb	SH3 shrub/he rb	SH4 pole sapling	SH5 young forest	SH6 mature forest	SH7 old growth
Limitations to Forestry Activities	no trees	-wet soils -erosion, compacti on -no trees - extremel y high values for wildlife	-wet soils -erosion, compacti on - extremel y high values for wildlife	-wet soils -erosion, compacti on - extremel y high wildlife values	as in SH4	as in SH4 -rarity on the landscap e

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SG Sxw - Soopolallie - grouseberry aspect

MSdk						
SG	SG2 herb	SG3 shrub/herb	SG4 pole sapling	SG5 young forest	SG6 mature forest	SG7 old forest
LIMITATIONS FOR PRESENT UNGULATE USE	-limited preferred forage	-as in SG2	-as in SG2	-as in SG2	-as in SG2	-as in SG2
HABITAT MANIPULATION CONSIDERATIONS	-moist soils	-as in SG2	as in SG2	-as in SG2	- maintain as movement corridor	-rare
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not manipulate, let return to forested state	-as in SG2	-as in SG2	-as in SG2	-as in SG2	-as in SG2
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above
Moose	-patch burn small areas	-patch burn small areas	-as in SG2	-as in SG2	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SG	SG2 herb	SG3 shrub/herb	SG4 pole sapling	SG5 young forest	SG6 mature forest	SG7 old forest
	adjacent to SH habitats every 20-25 years	adjacent to SH habitats every 20-25 years				
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-do not manipulate let return to mature forested state -protect snags and coarse woody debris	-do not manipulate let return to mature forested state -protect snags and coarse woody debris	as in SG2	as in SG2	-do not manipulate -protect snags and coarse woody debris	as in SG6
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	-do not treat within 100 m of small water courses -protect	-do not treat within 100 m of small water courses -protect	-as in SG2	-as in SG2	-as in SG2	-as in SG2

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SG	SG2 herb	SG3 shrub/herb	SG4 pole sapling	SG5 young forest	SG6 mature forest	SG7 old forest
	humus and litter	humus and litter				
Forest Harvest Activities	small patch manual brushing every 20-25 years	small patch manual brushing every 20-25 years	-small patch manual brushing every 20-25 years	none, important migration corridor	-none -rare on landscape -high value for biodiversity	-as in SG4
Limitations to Forestry Activities	-steep slopes -fine textured erodible soils -allow harvested areas to mature	-as in SG2	-as in SG2 -allow to mature	-steep slopes -fine textured soils - large intact stands important to wildlife population movements into lower elevation	-as in SG5	-rare in study area -maintain for biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SGk Sxw - Soopolallie - grouseberry; cool aspect
SGks Sxw - Soopolallie - grouseberry; cool aspect, shallow soils

MSdk						
SGk	SGk2, SGks2 herb	SGk3, SGks3 shrub/he rb	SGk4, SGks4 pole sapling	SGk5, SGks5 young forest	SGk6, SGks6 mature forest	SGk7, SGks7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-limited preferred forage	-as in SGk2	-as in SGk2	-as in SGk2	-as in SGk2	-as in SG2
HABITAT MANIPULATION CONSIDERATIONS	-moist soils	-as in SGk2	as in SGk2	-as in SGk2	- stands presently exhibit extensive use as movement corridors	-rare
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not manipulate, let return to forested state	-as in SGk2	-as in SGk2	-as in SGk2	-as in SGk2	-as in SGk2
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SGk	SGk2, SGks2 herb	SGk3, SGks3 shrub/herb	SGk4, SGks4 pole sapling	SGk5, SGks5 young forest	SGk6, SGks6 mature forest	SGk7, SGks7 old growth
Moose	-patch burn small areas adjacent to SH habitats every 20- 25 years	-patch burn small areas adjacent to SH habitats every 20- 25 years	-as in SGk2	-as in SGk2	-as above	-as above
Mountain Goat	not applicabl e	not applicabl e	not applicabl e	not applicabl e	not applicable	not applicabl e
Red and blue listed species (see Table -)	-do not manipula te let return to mature forested state -protect snags and coarse woody debris	-do not manipula te let return to mature forested state -protect snags and coarse woody debris	as in SGk2	as in SGk2	-do not manipulate -protect snags and coarse woody debris	as in SGk6
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	-do not treat within	-do not treat within	-as in SGk2	-as in SGk2	-as in SGk2	-as in SGk2

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk	SGk2, SGks2 herb	SGk3, SGks3 shrub/herb	SGk4, SGks4 pole sapling	SGk5, SGks5 young forest	SGk6, SGks6 mature forest	SGk7, SGks7 old growth
	100 m of small water courses -protect humus and litter	100 m of small water courses -protect humus and litter				
Forest Harvest Activities	small patch manual brushing every 20-25 years	small patch manual brushing every 20-25 years	-small patch manual brushing every 20-25 years	none, important migration corridor	-none -rare on landscape -high value for biodiversity	-as in SG4
Limitations to Forestry Activities	-steep slopes -fine textured erodible soils -allow harvested areas to mature	-as in SGk2	-as in SGk2 -allow to mature	-steep slopes -fine textured soils - large intact stands important to wildlife population movements into lower elevation	-as in SGk5	-rare in study area -maintain for biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SWkv Saskatoon - Bluebunch wheatgrass; cool aspect, very shallow soil
SWv Saskatoon - Bluebunch wheatgrass; very shallow soil

MSdk	SWkv2, SWv2 herb	SWkv3, SWv3 shrub/he rb	SWkv4, SWv4 pole sapling	SWkv5, SWv5 young forest	SWkv6, SWv6 mature forest	SWkv7, SWv7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area - Mountain goat suitability is lower if distant from RO or TA	as in SWv2	as in SWv2	as in SWv2		
HABITAT MANIPULATION CONSIDERATIONS	-thin soils -thin litter layer	-thin soils -thin litter layer	as in SWv2	as in SWv2	-thin soils - important cover area	-as in SWv6
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not treat	-manual brush in areas with soil every 20-25 years	-as in SWv3	-manual brush in areas with soil every 20-25 years -develop matrix of seral stages	-maintain as cover and movement corridors	as in SWv6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk	SWv	SWkv2, SWv2 herb	SWkv3, SWv3 shrub/herb	SWkv4, SWv4 pole sapling	SWkv5, SWv5 young forest	SWkv6, SWv6 mature forest	SWkv7, SWv7 old growth
					-develop cover and movement corridors		
	Mule Deer	-do not treat	-as above	-as above	-as above	-as above	-as above
	White-tail Deer	-do not treat	-as above	-as above	-as above	-as above	-as above
	Elk	-do not treat	-as above	-as above	-as above	-as above	-as above
	Moose	-do not treat	-no treatment -allow to develop to pole sapling stage	-no treatment	-as above	-as above	-as above
	Mountain Goat	-do not treat	-manual brush in areas with soil adjacent to RO and TA habitats every 20	-as in SWv2	-as in SWv2	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SWv	SWkv2, SWv2 herb	SWkv3, SWv3 shrub/herb	SWkv4, SWv4 pole sapling	SWkv5, SWv5 young forest	SWkv6, SWv6 mature forest	SWkv7, SWv7 old growth
		to 25 years				
Red and blue listed species (see Table -)	-maintain habitat diversity	-protect snags and coarse woody debris	-as in SWv3	-as in SWv3	-as in SWv3	-as in SWv3
Furbearers	-maintain habitat diversity	-as above	-as above	-as above	-as above	-as above
Fishery	-do not treat	-no treatment within 100 m of any surface water	-as in SWv3	-as in SWv3	-no treatment -protect humus and litter layers	-as in SWv6
Forest Harvest Activities	none	none	-small patch manual brushing	-small patch manual brushing	-none	-none
Limitations to Forestry Activities	-no trees	-thin soils -high wildlife values -no trees	-thin soils -high wildlife values	-as in SWv4	- important for biodiversi ty	-as in SWv6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

SS Sxw - Soopolallie - Snowberry; typic

MSdk						
SS	SS2 herb	SS3 shrub/herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-limited preferred forage	-as in SS2	-as in SS2	-as in SS2	-as in SS2	-as in SS2
HABITAT MANIPULATION CONSIDERATIONS	-moist soils	-as in SS2	as in SS2	-as in SS2	- stands presently exhibit extensive use as movement corridors	-rare
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not manipulate, let return to forested state	-as in SSk2	-as in SSk2	-as in SS2	-as in SS2	-as in SS2
Mule Deer	-as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	-as above	-as above	-as above	-as above	-as above	-as above
Elk	-as above	-as above	-as above	-as above	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SS	SS2 herb	SS3 shrub/herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth
Moose	-patch burn small areas adjacent to SH habitats every 20-25 years	-patch burn small areas adjacent to SH habitats every 20-25 years	-as in SS2	-as in SS2	-as above	-as above
Mountain Goat	not applicable	not applicable	not applicable	not applicable	not applicable	not applicable
Red and blue listed species (see Table -)	-do not manipulate let return to mature forested state -protect snags and coarse woody debris	-do not manipulate let return to mature forested state -protect snags and coarse woody debris	as in SS2	as in SS2	-do not manipulate -protect snags and coarse woody debris	as in SS6
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	-do not treat within	-do not treat within	-as in SS2	-as in SS2	-as in SS2	-as in SS2

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SS	SS2 herb	SS3 shrub/herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth
	100 m of small water courses -protect humus and litter	100 m of small water courses -protect humus and litter				
Forest Harvest Activities	small patch manual brushing every 20-25 years	small patch manual brushing every 20-25 years	-small patch manual brushing every 20-25 years	none, important migration corridor	-none -rare on landscape -high value for biodiversity	-as in SS4
Limitations to Forestry Activities	-steep slopes -fine textured erodible soils -allow harvested areas to mature	-as in SS2	-as in SS2 -allow to mature	-steep slopes -fine textured soils - large intact stands important to wildlife population movements into lower	-as in SG5	-rare in study area -maintain for biodiversity

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MSdk						
SS	SS2 herb	SS3 shrub/ herb	SS4 pole sapling	SS5 young forest	SS6 mature forest	SS7 old growth
				elevation		

6.4 ESSFdk - Ecosystem Units

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk/00 - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

ACk - Avalanche chute; cool aspect ecosystem unit

Description: **AC** typically occurs in moist draws with concave surface shape and mesic to subhygric moisture regime. Regularly disturbed by sliding snow. These are coarse textured soils on colluvial parent material often in a mosaic with non-vegetated rubble (RU) ecosystem unit **ACk** is similar to the typic situation but with a steep cool aspect and submesic to mesic soil moisture.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
ACk2 herb	dense herb cover of: fireweed smooth brome pinegrass	bluejoint slender wheatgrass sedge	fireweed smooth brome	bluejoint slender wheatgrass sedge	fireweed grasses sedge
ACk3 shrub/herb	dense shrub cover of: Sitka alder black gooseberry willows	subalpine fir pinegrass fireweed smooth brome	willows	fireweed smooth brome	black gooseberry fireweed smooth brome
ACk4 pole sapling	subalpine fir Sitka alder black gooseberry willows	whitebark pine Engelmann spruce pinegrass	subalpine fir willows		whitebark pine black gooseberry
COMMENTS	The floristics of avalanche tracks can vary with the degree of disturbance, soil moisture, and location within the avalanche track.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk/02 - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

- DM Fd - Douglas maple - Soopolallie; typic ecosystem unit**
- DMk Fd - Douglas maple - Soopolallie; cool aspect ecosystem unit**
- DMrs Fd - Douglas maple - Soopolallie; ridge, shallow soil ecosystem unit**
- DMrv Fd - Douglas maple - Soopolallie; ridge, very shallow soil ecosystem unit**
- DMs Fd - Douglas maple - Soopolallie; shallow soil ecosystem unit**
- DMv Fd - Douglas maple - Soopolallie; very shallow soil ecosystem unit**

Description: **DM** typically occurs on steep warm aspect with deep medium-textured soils. Common parent materials are colluvial and morainal blankets with subxeric to submesic soil moisture regimes. Mor or moder humus form, silt loam textures. Brunisolic soil development occurs frequently.

DMk occurs on typic sites but with cool aspects.

DMs occurs on typic sites with shallow soils.

DMrs, DMrv occur on gently sloping ridges with shallow and very shallow soils respectively.

DMv occurs on typic sites with very shallow soils

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DM2,DMs2,DMk2, DMrs2, DMrv, DMv2 herb	fireweed	lodgepole pine pinegrass showy aster	fireweed	showy aster lodgepole pine	fireweed
DM3,DMs3,DMk3, DMrs3, DMrv3, DMv3 shrub /herb	clumpy shrubby site of: Douglas maple soopolallie common juniper	lodgepole pine saskatoon pinegrass twinflower showy aster	Douglas maple soopolallie	saskatoon showy aster lodgepole pine	soopolallie saskatoon
DM4, DMs4 DMk4,	clumpy closed pole	Douglas-fir	lodgepole pine	Douglas-fir	soopolallie

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
DMrs4, DMrv4, DMv4 pole sapling	sapling forest of: lodgepole pine common juniper	subalpine fir Douglas maple soopolallie saskatoon pinegrass twinflower showy aster		subalpine fir Douglas maple soopolallie saskatoon showy aster	saskatoon
DM5,DMs3,DMk5, DMrs5, DMrv5, DMv5 young forest	closed canopy young forest cover of: lodgepole pine common juniper	Douglas-fir subalpine fir Douglas maple soopolallie saskatoon pinegrass twinflower showy aster	lodgepole pine	Douglas-fir subalpine fir Douglas maple soopolallie saskatoon showy aster	soopolallie saskatoon
DM6,DMs6, DMk6, DMrs6, DMrv6, DMv3 mature forest K3,K4	closed canopy young forest cover of: Douglas-fir common juniper	lodgepole pine subalpine fir Douglas maple soopolallie saskatoon pinegrass twinflower showy aster	Douglas-fir	subalpine fir Douglas maple soopolallie saskatoon showy aster	soopolallie saskatoon
DM7,DMs7,DMk7, DMrs7, DMrv7, DMv7 old growth	closed canopy mature forest cover of: Douglas-fir common juniper	lodgepole pine subalpine fir Douglas maple soopolallie saskatoon pinegrass twinflower showy aster	Douglas-fir	subalpine fir Douglas maple soopolallie saskatoon showy aster	soopolallie saskatoon

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
COMMENTS					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk/00 - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

ESw Exposed Soil ecosystem unit

Description: Exposed mineral soils generally on glaciofluvial, glaciolacustrine or colluvial slopes with warm aspects. Less than 10% coverage of vegetation.

ESSFdk/01 - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

FA BI - Azalea - Foamflower; typic ecosystem unit

Description: FA typically occurs on gently sloping sites with deep medium-textured soils. These sites generally have mesic soil moisture regimes. This unit occurs frequently on morainal parent materials.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
FA2 herb	fireweed mountain-avens sedges	bluejoint	fireweed sedges	bluejoint	fireweed sedges bluejoint
FA3 shrub/herb	open shrubby sites of: fireweed sedges pinegrass black gooseberry	subalpine fir Engelmann spruce grouseberry bluejoint twinflower mosses	fireweed sedges	subalpine fir bluejoint	grouseberry bluejoint fireweed sedge black gooseberry
FA4	dense stands of:	false azalea	subalpine fir	heart leave arnica	black gooseberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
pole sapling	Engelmann spruce subalpine fir mosses	black gooseberry heart-leaved arnica western meadowrue grouseberry twinflower		western meadowrue	grouseberry
FA5 young forest	closed stands of: Engelmann spruce subalpine fir false azalea mosses	heart-leaved arnica western meadowrue black gooseberry twinflower grouseberry	subalpine fir	heart-leaved arnica western meadowrue	black gooseberry grouseberry
FA6 mature forest	closed stands of: Engelmann spruce subalpine fir false azalea mosses	heart-leaved arnica western meadowrue black gooseberry twinflower grouseberry	subalpine fir	heart-leaved arnica western meadowrue	black gooseberry grouseberry
FA7 old forest	closed stands of: Engelmann spruce subalpine fir false azalea mosses	heart-leaved arnica western meadowrue black gooseberry grouseberry twinflower	subalpine fir	heart-leaved arnica western meadowrue	black gooseberry grouseberrygrouseberry
COMMENTS					

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk/05 - Dry Cool Engelmann Spruce Subalpine Fir Subzone

FM BI - Azalea - Step Moss; typic ecosystem unit
FMg BI - Azalea -Step Moss; gullied ecosystem unit

Description: FM typically occurs on gently sloping to level sites in receiving positions on medium-textured soils.
FMg occurs in gullies

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
FM2, FMg2 herb	fireweed	false azalea	fireweed		fireweed
FM3, FMg3 shrub/herb	shrubby site of: willow false azalea black twinberry	lodgepole pine black gooseberry twinflower grouseberry dwarf scouring rush	black twinberry	lodgepole pine dwarf scouring rush	black twinberry black gooseberry grouseberry dwarf scouring rush
FM4, FMg4 pole sapling	dense forest of: lodgepole pine red-stemmed feathermoss step moss	willow false azalea black twinberry black gooseberry twinflower grouseberry dwarf scouring rush	lodgepole pine	subalpine fir black twinberry dwarf scouring rush	black twinberry black gooseberry grouseberry dwarf scouring rush
FM5, FMg5 young forest	closed forest of: lodgepole pine red-stemmed	Engelmann spruce subalpine fir false azalea black twinberry	lodgepole pine	subalpine fir black twinberry dwarf scouring rush	black twinberry black gooseberry subalpine fir grouseberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
	feathermoss step moss	black gooseberry twinflower grouseberry dwarf scouring rush			dwarf scouring rush
FM6, FMg6 mature forest	closed forest of: Engelmann spruce red-stemmed feathermoss step moss	subalpine fir false azalea black twinberry black gooseberry twinflower grouseberry dwarf scouring rush		subalpine fir black twinberry dwarf scouring rush	black twinberry black gooseberry grouseberry dwarf scouring rush
FM7, FMg7 old forest	closed forest of: Engelmann spruce red-stemmed feathermoss step moss	subalpine fir false azalea black twinberry black gooseberry twinflower grouseberry dwarf scouring rush		subalpine fir black twinberry dwarf scouring rush	black twinberry black gooseberry grouseberry dwarf scouring rush
COMMENTS	Plant communities can vary based on flooding history.				

ESSFdk/04 - Dry Cool Engelmann Spruce Subalpine Fir Subzone

- FS BI - Azalea - Soopolallie; typic ecosystem unit**
- FSc BI - Azalea - Soopolallie; coarse-textured ecosystem unit**
- FSk BI - Azalea - Soopolallie; cool aspect ecosystem unit**
- FSks BI - Azalea - Soopolallie; cool aspect, shallow soil ecosystem unit**
- FSkv BI - Azalea - Soopolallie; cool aspect, very shallow soil ecosystem unit**
- FSs BI - Azalea - Soopolallie; shallow soil ecosystem unit**
- FSsw BI - Azalea - Soopolallie; warm aspect shallow soil ecosystem unit**
- FSw BI - Azalea - Soopolallie; warm aspect ecosystem unit**

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE

Description: FS typically occurs on gently sloping medium-textured, calcareous soils. These sites have submesic to mesic soil moisture regimes and permosotrophic nutrient regimes.

FSc occurs on sites with coarse textured soils.

FSk occurs on sites with cool aspects.

FSks occurs on sites with cool aspects and shallow soils

FSkv occurs on sites with cool aspects and very shallow soils

FSs occurs on sites with shallow soils

FSsw occurs on sites with warm aspects and shallow soils

FSw occurs on sites with warm aspects.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
FS2 , FSc2, FSk2, FSks2, FSkv2, FSs2, FSsw2, FSw2 herb	fireweed bluejoint	Columbia brome	fireweed bluejoint	Columbia brome	fireweed bluejoint Columbia brome
FS3 , FSc3, FSk3, FSks3, FSkv3, FSs3, FSsw3, FSw3 shrub K2	shrubby site of: black huckleberry false azalea lodgepole pine	soopolallie twinflor Canada bunchberry bluejoint fireweed Columbia brome grouseberry twinflor	black huckleberry lodgepole pine	soopolallie bluejoint fireweed Columbia brome	black huckleberry soopolallie bluejoint fireweed Columbia brome grouseberry
FS4 , FSc4, FSk4, FSks4,	dense forest of:	black huckleberry	lodgepole pine	black huckleberry	black huckleberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-20%	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
FSkv4,FSs4,FSsw4,FSw4 pole sapling 964346	lodgepole pine false azalea	twinflower Canada bunchberry red-stemmed feather- moss step moss grouseberry			grouseberry
FS5 ,FSc5,FSk5,FSks5, FSkv5,FSs5,FSsw5,FSw5 young forest 964344, K1	closed forest of: lodgepole pine false azalea red-stemmed feathermoss	Engelmann spruce subalpine fir black huckleberry twinflower Canada bunchberry showy aster grouseberry	lodgepole pine	subalpine fir black huckleberry showy aster	black huckleberry grouseberry
FS6 ,FSc6,FSk6,FSks6, FSkv6,FSs6,FSsw6,FSw6 mature forest	closed forest of: false azalea Engelmann spruce subalpine fir red-stemmed feathermoss	lodgepole pine black huckleberry twinflower Canada bunchberry showy aster grouseberry	subalpine fir	subalpine fir black huckleberry showy aster	black huckleberry grouseberry
FS7 ,FSc7,FSk7,FSks7, FSkv7,FSs7,FSsw7,FSw7 old forest K6	closed forest of: Engelmann spruce subalpine fir false azalea red-stemmed feathermoss	lodgepole pine black huckleberry twinflower Canada bunchberry white-flowered rhododendron grouseberry	subalpine fir	subalpine fir black huckleberry	black huckleberry grouseberry
COMMENTS					

Figure 7. ESSFdk/04: FS BI - Azalea - Soopolallie; typic ecosystem unit

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

ROw Rock outcrop; warm aspect ecosystem unit

ROk Rock outcrop; cool aspect ecosystem unit

Description: Rock outcroppings with very thin (less than 10 cm)surficial material deposits, may have some fine textured material as a result of weathering. Very xeric to xeric moisture regime. Less than 10% vegetation

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS >20%	ASSOCIATES 5-10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
ROw		open rock with low cover of: grasses foliose lichens fruticose lichens		grasses	grasses
ROk		open rock with low cover of: mosses foliose lichens fruticose lichens			
COMMENTS	There exists potential for many species of vascular plant and bryophytes that could be considered rare or important for biodiversity. The difference between the floristics of rocks of differing origin was not investigated within the realm of this study. There is much to learn about the vegetation of these extreme sites.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

TAw Talus; warm aspect ecosystem unit
TAk Talus; cool aspect ecosystem unit
RUw Rubble; warm aspect ecosystem unit
RUK Rubble; cool aspect ecosystem unit

Description: **TA** is very coarse textured active colluvial fans or blankets. Very xeric moisture regime, little soil development.
RU is coarse textured, shallow (<1m) colluvial or morainal material with little soil development.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES <10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
TAw1		open boulder fields with low cover of: foliose lichens crustose lichens			
TAk1		open boulder fields with low cover of: parsley fern <i>Pohlia</i> moss foliose lichens crustose lichens			parsley fern
RUw1	bare colluvium or soil	foliose lichens crustose lichens			
RUK1	bare colluvium or soil	parsley fern <i>Pohlia</i> moss			parsley fern

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES <10%	DOMINANTS >20%	ASSOCIATES 5-10%	BEAR FORAGE
TAw1		open boulder fields with low cover of: foliose lichens crustose lichens			
		foliose lichens crustose lichens			
COMMENTS	Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus or rubble field.				

6.4.1 ESSFdk - Interpretation Tables

ACk - Avalanche chute ecosystem unit

ESSFdk ACw	ACK3 - shrub
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area -high elevation -snow depth, unstable snow surface can cause winter/spring mortality -no cover, steep slopes limiting to whitetail deer and moose
HABITAT MANIPULATION CONSIDERATIONS	-steep slopes - high elevation -no manipulation-
HABITAT TREATMENT	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk ACw	ACK3 - shrub
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area -high elevation -snow depth, unstable snow surface can cause winter/spring mortality -no cover, steep slopes limiting to whitetail deer and moose
RECOMMENDATIONS	
Rocky Mountain Bighorn Sheep	no treatment
Mule Deer	no treatment
White-tail Deer	as above
Elk	as above
Moose	as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk ACw	ACK3 - shrub
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area -high elevation -snow depth, unstable snow surface can cause winter/spring mortality -no cover, steep slopes limiting to whitetail deer and moose
Mountain Goat	as above
Red and blue listed species (see Table -)	as above
Furbearers	as above
Fishery	as above
Forest Harvest Activities	as above
Limitations to Forestry	no trees

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk ACw	ACK3 - shrub
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area -high elevation -snow depth, unstable snow surface can cause winter/sp ring mortality -no cover, steep slopes limiting to whitetail deer and moose
Activities	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

DM Douglas maple - Soopolallie

ESSFdk DM, DMs	DM2 herb	DM3 - shrub/he rb	DM4 pole - sapling	DM5 young forest	DM6 mature forest	DM7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-limited area -snow depth -no cover	-limited area -high elevation -snow depth -no cover	-high elevation -snow depth	-as in DM4	-as in DM4	-as in DM4
HABITAT MANIPULATION CONSIDERATIONS	do not treat	-steep slopes -thin soils -access - natural firebreak s such as rock outcroppi ngs should be adjacent	-as in DM3	-as in DM3	-as in DM3	-as in DM3
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	do not treat	-monitor animal numbers and condition in areas	-spring burn every 20- 25 years within a matrix of	-as in DM2	-do not treat -maintain as cover and moveme	do not treat maintain as cover and moveme

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk						
DM, DMs	DM2 herb	DM3 - shrub/herb	DM4 pole - sapling	DM5 young forest	DM6 mature forest	DM7 old growth
		of high use -spring burn every 20 years to maintain existing openings	shrub herb and mature forested sites		nt corridors	nt corridors
Mule Deer	as above	-as above	-as above	-as above	-as above	-as above
White-tail Deer	as above	-none	-none	-none	-none	none
Elk	as above	-spring burn every 20-25 years to maintain existing openings	-spring burn every 20-25 years within a matrix of shrub herb and mature forested sites.	-do not treat	-do not treat -maintain as cover and movement corridors	-as in DM4
Moose	as above	-none	-none	-none	-none	-none
Mountain Goat	as above	-spring burn every 20-25 years only in	-do not treat	-do not treat	-do not treat	-do not treat

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk						
DM, DMs	DM2 herb	DM3 - shrub/herb	DM4 pole - sapling	DM5 young forest	DM6 mature forest	DM7 old growth
		areas adjacent to RO				
Red and blue listed species (see Table -)	maintain habitat diversity	-maintain snags and coarse woody debris	-maintain habitat diversity -maintain snags and coarse woody debris	-as in DM4	-as in DM4	-as in DM4
Furbearers	as above	as above	as above	as above	as above	as above
Fishery	do not treat	-maintain humus and litter layers -do not disturb within 100 m of small watercourses	-do not treat	-do not treat	-do not treat	-do not treat
Forest Harvest Activities	none	-none	-none	-none	-none	-none -rare on landscape -

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk DM, DMs	DM2 herb	DM3 - shrub/he rb	DM4 pole - sapling	DM5 young forest	DM6 mature forest	DM7 old growth
						important element for biodiversi ty within the study area
Limitations to Forestry Activities	no trees	-no trees -steep slopes -thin soil and litter layers - extremel y high wildlife values	-steep slopes -thin soil and litter layers -high wildlife values	-as in DM4	-as in DM4	-as in DM4

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

FA - BI - Azalea - Foamflower

ESSFdk FA	FA2 - herb	FA3 - shrub	FA4 - pole sapling	FA5 - young forest	FA6 - mature forest	FA7 -old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-no cover -late snow retention -low cover of preferred forage	-no cover -late snow retention -low cover of preferred forage	-late snow retention -dense cover of young conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-low cover of preferred forage
HABITAT MANIPULATION CONSIDERATIONS	-high elevation	-as in FA2	-as in FA2	-as in FA2	-high wildlife tree and ungulate cover values	-high wildlife tree and ungulate cover values
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat
Mule Deer	do not treat	-allow to grow into cover -develop mature	-as in FA3	-as in FA3	-do not treat	-do not treat

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk FA	FA2 - herb	FA3 - shrub	FA4 - pole sapling	FA5 - young forest	FA6 - mature forest	FA7 -old growth
		forested moveme nt corridors between FA and adjacent warm aspects				
White-tail Deer	do not treat	-as above	-as above	-as above	-as above	-as above
Elk	do not treat	-as above	-as above	-as above	-as above	-as above
Moose	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e
Mountain Goat	do not treat	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat
Red and blue listed species (see Table -)	maintain habitat diversity	-allow to grow into mature forests -protect snags and coarse woody debris	-as in FA3	-as in FA3	-do not treat -protect snags and coarse woody debris	-as in FA6
Furbearers	maintain habitat	-as above	-as above	-as above	-as above	-as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk FA	FA2 - herb	FA3 - shrub	FA4 - pole sapling	FA5 - young forest	FA6 - mature forest	FA7 -old growth
	diversity					
Fishery	-do not treat within 100 of small water courses	-do not treat within 100 m of small water courses or wetlands	-as in FA2	-as in FA2	-do not treat	-do not treat
Forest Harvest Activities	none	none	-manual thinning in small patches adjacent to escape terrain and contiguous cover and migration corridors	-as in FA4	-small group selection cut, openings 0.6 to 1.2 ha in size	-none
Limitations to Forestry Activities	-no trees	-high elevation -no trees -cold soils	-high elevation --dense brush and conifer regeneration	-as in FA2	-high value to biodiversity -high value to red and blue	-as in FA6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk	FA2 - herb	FA3 - shrub	FA4 - pole sapling	FA5 - young forest	FA6 - mature forest	FA7 -old growth
FA			-cold soils -steep slopes		listed species -cold soils	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

FG False azalea - Grouseberry; typic
FGk False azalea - Grouseberry; cool aspect

ESSFdk						
FGk	FGk2 herb	FGk3 shrub	FGk4 pole sapling	FGk5 young forest	FGk6 mature forest	FGk7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-no cover -late snow retention -low cover of preferred forage	-no cover -late snow retention -low cover of preferred forage	-late snow retention -dense cover of young conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-low cover of preferred forage
HABITAT MANIPULATION CONSIDERATIONS	do not manipula te	-rapid successi on -steep slopes	-rapid successi on -steep slopes	-steep slopes	-rare on landscap e -high wildlife tree and ungulate cover values -steep slopes	-rare on landscap e -high wildlife tree and ungulate cover values -steep slopes
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not treat	-do not treat	-do not treat	-do not treat	--do not treat	-do not treat

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk						
FGk	FGk2 herb	FGk3 shrub	FGk4 pole sapling	FGk5 young forest	FGk6 mature forest	FGk7 old growth
Mule Deer	do not treat	-allow to grow into cover -develop mature forested moveme nt corridors between FG and adjacent warm aspects	-as in FG3	-as in FG3	-do not treat	-do not treat
White-tail Deer	do not treat	-as above	-as above	-as above	-as above	-as above
Elk	do not treat	-as above	-as above	-as above	-as above	-as above
Moose	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e	-not applicabl e
Mountain Goat	do not treat	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat
Red and blue listed species (see Table -)	maintain habitat diversity	-allow to grow into mature forests -protect snags	-as in FG3	-as in FG3	-do not treat -protect snags and coarse	-as in FG6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk						
FGk	FGk2 herb	FGk3 shrub	FGk4 pole sapling	FGk5 young forest	FGk6 mature forest	FGk7 old growth
		and coarse woody debris			woody debris	
Furbearers	maintain habitat diversity	-as above	-as above	-as above	-as above	-as above
Fishery	-do not treat within 100 of small water courses	-do not treat within 100 m of small water courses	-as in FG3	-as in FG3	-do not treat	-do not treat
Forest Harvest Activities	none	none	-manual thinning in small patches adjacent to escape terrain and contiguous cover and migration corridors	-as in FG4	-small group selection cut, openings 0.6 to 1.2 ha in size	-none
Limitations to Forestry Activities	-no trees	-high elevation	-high elevation	-as in FG2	-high value to	-as in FG6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk						
FGk	FGk2 herb	FGk3 shrub	FGk4 pole sapling	FGk5 young forest	FGk6 mature forest	FGk7 old growth
		-no trees -cold soils -steep slopes	--dense brush and conifer regenerat ion -cold soils -steep slopes		biodiversi ty -high value to red and blue listed species -cold soils	

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

FS - BI - Azalea - Soopolallie: typic

ESSFdk FS	FS2 herb	FS3 shrub	FS4 pole sapling	FS5 young forest	FS6 mature forest	FS7 old growth
LIMITATIONS FOR PRESENT UNGULATE USE	-no cover -late snow retention -low cover of preferred forage	-no cover -late snow retention -low cover of preferred forage	-late snow retention -dense cover of young conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-dense cover of conifers -low cover of preferred forage	-low cover of preferred forage
HABITAT MANIPULATION CONSIDERATIONS	-high elevation	- as in FS2	- as in FS2	- as in FS2	- as in FS2	- as in FS2
HABITAT TREATMENT RECOMMENDATIONS						
Rocky Mountain Bighorn Sheep	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat
Mule Deer	do not treat	-allow to grow into cover -develop mature forested moveme nt corridors between	-as in FS3	-as in FS3	-do not treat	-do not treat

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk	FS2 herb	FS3 shrub	FS4 pole sapling	FS5 young forest	FS6 mature forest	FS7 old growth
		FS and adjacent warm aspects				
White-tail Deer	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable	--not applicable
Elk	do not treat	do not treat	do not treat	do not treat	-do not treat	do not treat
Moose	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable	-not applicable
Mountain Goat	do not treat	-do not treat	-do not treat	-do not treat	-do not treat	-do not treat
Red and blue listed species (see Table -)	maintain habitat diversity	-allow to grow into mature forests -protect snags and coarse woody debris	-as in FS3	-as in FS3	-do not treat -protect snags and coarse woody debris	-as in FS6
Furbearers	maintain habitat diversity	-as above	-as above	-as above	-as above	-as above
Fishery	-do not treat within	-do not treat within	-as in FS2	-as in FS2	-do not treat	-do not treat

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk FS	FS2 herb	FS3 shrub	FS4 pole sapling	FS5 young forest	FS6 mature forest	FS7 old growth
	100 of small water courses	100 m of small water courses or wetlands				
Forest Harvest Activities	none	none	-manual thinning in small patches adjacent to escape terrain and contiguous cover and migration corridors	-as in FS4	-small group selection cut, openings 0.6 to 1.2 ha in size	-none
Limitations to Forestry Activities	-no trees	-high elevation -no trees -cold soils	-high elevation --dense brush and conifer regeneration -cold soils	-as in FS2	-high value to biodiversity -high value to red and blue listed species -cold soils	-as in FS6

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

RO - Rock Outcrop; typic

RU - Rubble; typic

TA - Talus; typic

ESSFdk ROk, ROw, RUk, RUw, TAk, TAw	ROk, ROw	RUk, RUw	TAk, TAw
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk	-low forage cover -TAw has higher value to bighorn sheep and mtn goat than TAk
HABITAT MANIPULATION CONSIDERATIONS	-steep unstable slopes -low forage productio n -very slow successi on	-as in RO	-as in RO
HABITAT TREATMENT RECOMMENDATIONS			
Rocky Mountain Bighorn Sheep	-spring burn	-spring burn	-spring burn

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk ROk, ROw, RUk, RUw, TAk, TAw	ROk, ROw	RUk, RUw	TAk, TAw
	warm aspects near RO -facilitate the development of movement corridors adjacent to RO	warm aspects near RU -facilitate development of movement corridors adjacent to RU	warm aspects near TA -facilitate the development of movement corridors adjacent to TA
Mule Deer	-as above	-as above	-as above
White-tail Deer	-not applicable	-not applicable	-not applicable
Elk	-none -facilitate the development of movement corridors adjacent to RO	-none -facilitate the development of movement corridors adjacent to RU	-none -facilitate the development of movement corridors adjacent to TA
Moose	-not applicable	-not applicable	-not applicable

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk	ROk, ROw	RUk, RUw	TAk, TAw
Mountain Goat	-spring burn warm aspects near RO -facilitate the development of movement corridors adjacent to RO	-spring burn warm aspects near RU -facilitate the development of movement corridors adjacent to RU	-spring burn warm aspects near TA -facilitate the development of movement corridors adjacent to TA
Red and blue listed species (see Table -)	--protect snags and coarse woody debris - minimize forestry activities near RO	--protect snags and coarse woody debris - minimize forestry activities near RU	-protect snags and coarse woody debris - minimize forestry activities near TA
Furbearers	-as above	-as above	-as above
Fishery	-avoid disturbance	-avoid disturbance	-avoid disturbance

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk ROk, ROw, ROk, RUw, TAk, TAw	ROk, ROw	ROk, RUw	TAk, TAw
Forest Harvest Activities	none	none	none
Limitations to Forestry Activities	-steep, unstable slopes -sensitive sites, little soil develop ment -poor forest productio n	-as in RO	as in RO

6.5 ESSFdkp Ecosystem Units

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp - Dry Cool Engelmann Spruce - Subalpine Fir Parkland Subzone

AW - Mountain-avens - snow willow ecosystem unit

Description: **AW** is typically a non-treed, edaphic climax unit and occurs at higher elevations and ridges on various slopes with a warm aspect and has shallow coarse textured soil on colluvial or morainal parent material. The soil moisture regime is generally subxeric to mesic.

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
AW2 herb - low shrub	white mountain-avens	snow willow alpine bluegrass		snow willow alpine bluegrass	alpine bluegrass
AWk2 herb - low shrub	white mountain-avens	subalpine fir snow willow alpine bluegrass wild strawberry		snow willow alpine bluegrass subalpine fir wild strawberry	alpine bluegrass wild strawberry

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

ROk Rock outcrop; cool aspect ecosystem unit

ROW Rock outcrop; warm aspect ecosystem unit

Description:**RO** is non vegetated rock outcrops.

ROk is on a moderate to steep cool aspect

ROW is on a moderate to steep warm aspect

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
ROk1	bare rock or shallow colluvium	foliose lichens crustose lichens			
ROW1	bare rock or shallow colluvium	foliose lichens crustose lichens			
COMMENTS	Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus field.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdk - Dry Cool Engelmann Spruce - Subalpine Fir Subzone

RUk Rubble; cool aspect ecosystem unit
RUw Rubble; warm aspect ecosystem unit

Description:**RU** is coarse textured, shallow (<1m) colluvial or morainal material with little soil development.
RUk is on a moderate to steep cool aspect
RUw is on a moderate to steep warm aspect

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
RUk1	bare colluvium or soil	foliose lichens crustose lichens			
RUw1	bare colluvium or soil	foliose lichens crustose lichens			
COMMENTS	Vegetation cover will vary with the position on the slope and the amount of active colluviation within the talus field.				

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp - Dry Cool Engelmann Spruce - Subalpine Fir Parkland Subzone

- WF - PaBI; typic ecosystem unit**
- WFk - PaBI; cool aspect ecosystem unit**
- WFkv - PaBI; cool aspect, very shallow soil ecosystem unit**
- WFv - PaBI; very shallow soil ecosystem unit**

Description: **WF** typically occurs on steep slopes with a warm aspect and on shallow, coarse textured soil on colluvial or morainal parent material. Soil moisture is generally subxeric to mesic. This is a slow successional, open parkland type.

WFk occurs on sites with cool aspects

WFkv occurs on sites with cool aspects and very shallow soils

WFv occurs on sites with very shallow soils

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
WF2, WFk2, WFkv2, WFv2 herb	alpine bluegrass Rocky-Mountain fescue	spike trisetum diverse leaved cinquefoil alpine pussytoes	alpine bluegrass Rocky-Mountain fescue	spike trisetum diverse-leaved cinquefoil	alpine bluegrass Rocky-Mountain fescue spike trisetum
WF3, WFk3, WFkv3, WFv3 shrub	whitebark pine Rocky-Mountain fescue alpine bluegrass	subalpine fir grouseberry spike trisetum	alpine bluegrass Rocky-Mountain fescue	spike trisetum subalpine fir	whitebark pine grasses grouseberry
WF4, WFk4, WFkv4,	whitebark pine	grouseberry	alpine bluegrass	spike trisetum	whitebark pine

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

MAP SYMBOL	VEGETATION				
	SUCCESSIONAL TRENDS		UNGULATE FORAGE		
	DOMINANTS	ASSOCIATES	DOMINANTS >20%	ASSOCIATES 5-20%	BEAR FORAGE
WFv4 pole sapling	Rocky-Mountain fescue alpine bluegrass	subalpine fir Engelmann spruce spike trisetum	Rocky-Mountain fescue	subalpine fir	grasses grouseberry
WF5, WFK5, WFkv5, WFv5 young forest	whitebark pine Rocky-Mountain fescue subalpine fir alpine bluegrass	grouseberry subalpine fir Engelmann spruce spike trisetum	Rocky-Mountain fescue alpine bluegrass	spike trisetum subalpine fir	whitebark pine grasses grouseberry
WF6, WFK6, WFkv6, WFv6	whitebark pine Rocky-Mountain fescue subalpine fir alpine bluegrass	grouseberry subalpine fir Engelmann spruce spike trisetum	Rocky-Mountain fescue alpine bluegrass	spike trisetum subalpine fir	whitebark pine grasses grouseberry
WF7, WFK7, WFkv7, WFv7	whitebark pine Rocky-Mountain fescue subalpine fir alpine bluegrass	grouseberry subalpine fir Engelmann spruce spike trisetum	Rocky-Mountain fescue alpine bluegrass	spike trisetum subalpine fir	whitebark pine grasses grouseberry
COMMENTS	Whitebark pine cone seeds can be an important grizzly bear food.				

6.5.1 ESSFdkp Interpretation Tables

AW - Mountain-avens - Snow Willow
WF Pa - Subalpine fir

ESSFdkp	AW	WF
LIMITATIONS FOR PRESENT UNGULATE USE	-high elevation -need migration corridors and adjacent cover	-same as AW
HABITAT MANIPULATION CONSIDERATIONS	-do not manipulate -snow willow is an important forage plant for mtn goat and bighorn sheep	-do not manipulate
HABITAT TREATMENT RECOMMENDATIONS		
Rocky Mountain Bighorn Sheep	no treatment	no treatment
Mule Deer	as above	as above

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp	AW	WF
LIMITATIONS FOR PRESENT UNGULATE USE	-high elevation -need migration corridors and adjacent cover	-same as AW
White-tail Deer	as above	as above
Elk	as above	as above
Moose	as above	as above
Mountain Goat	as above	as above
Red and blue listed species (see Table -)	as above	as above
Furbearers	as above	as above
Fishery	as above	as above
Forest Harvest Activities	none	none
Limitations to Forestry Activities	no trees	same as EM

RO - Rock Outcrop
 RU - Rubble

ESSFdkp	ROw	RUk
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk
HABITAT MANIPULATION CONSIDERATIONS	-steep unstable slopes -low forage production -very slow succession	-as in RO
HABITAT TREATMENT RECOMMENDATIONS		
Rocky Mountain Bighorn Sheep	-facilitate the	-facilitate develop

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp	ROw	RUk
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk
	development of movement corridors adjacent to RO	ment of movement corridors adjacent to RU
Mule Deer	-as above	-as above
White-tail Deer	-not applicable	-not applicable
Elk	-none -facilitate the development of movement	-none -facilitate the development of movement

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp	ROw	RUk
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk
	corridors adjacent to RO	corridors adjacent to RU
Moose	-not applicable	-not applicable
Mountain Goat	-facilitate the development of movement corridors adjacent to RO	-facilitate the development of movement corridors adjacent to RU
Red and blue listed species (see Table -)	--protect snags and coarse	--protect snags and coarse

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp	ROw	RUk
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk
	woody debris - minimize forestry activities near RO	woody debris - minimize forestry activities near RU
Furbearers	-as above	-as above
Fishery	-avoid disturbance	-avoid disturbance
Forest Harvest Activities	none	none
Limitations to Forestry Activities	-steep, unstable slopes -sensitive sites, little soil	-as in RO

EAST COLUMBIA LAKE - TERRESTRIAL ECOSYSTEM MAPPING - November 1997

ESSFdkp	ROw	RUk
LIMITATIONS FOR PRESENT UNGULATE USE	-low forage cover -ROw has higher value to bighorn sheep and mtn goat than ROk	-low forage cover -RUw has higher value to bighorn sheep and mtn goat than RUk
	develop ment -poor forest productio n	

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**APPENDIX I.
Ecosystem Unit Correlation Table**

BEC	Map Code	BC MoF Site Series Braumandl et. al (1992)	Achuff et. al. (1984)
IDFun	BS	00	
	CD	05	
	DJ	01	
	SS	04	
	SW	02a	
	SWw	02b	
IDFdm2	AW	02	
	DS	03	
	DT	01	
	SH	07	
	SP	04	
	SS	05	
MSdk	LJ	03	
	LP	04	
	SG	01	
	SH	06	
	SS	05	
	SW	02	
ESSdk	AC		
	DM	02	
	FA	01	
	FG	03	
	FM	05	
	FS	04	

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ESSFdkp	AC		L7
	WF		O4