BRITISH COLUMBIA HYDRO AND POWER AUTHORITY

HAT CREEK PROJECT

Tera Environmental Resource Analyst Ltd. and Canadian Bio-Resources Consultants Ltd. - Hat Creek Project - Detailed Environmental Studies - Physical Habitat and Range Vegetation Report - Appendix Volume - June 1978.

ENVIRONMENTAL IMPACT STATEMENT REFERENCE NUMBER: 16b

B.C. HYDRO AND POWER AUTHORITY
HAT CREEK PROJECT

DETAILED ENVIRONMENTAL STUDIES
LAND RESOURCES SUBGROUP

PHYSICAL HABITAT AND RANGE VEGETATION REPORT

APPENDIX VOLUME

PREPARED BY:

THE TERA ENVIRONMENTAL RESOURCE ANALYST LIMITED

AND

CANADIAN BIO RESOURCES CONSULTANTS LTD.

JUNE 1978

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APPENDIX A

PHYSICAL AND BIOLOGICAL FIELD DATA FORMS

Plot Number .....

PHYSICAL DATA FORM

Site Type .....
Location .....
Date ..... Aerial Photograph .....
Biogeoclimatic Zone .....

Slope ..... degrees
Aspect ..... degrees

Elevation ..... meters/feet
Length of upslope ..... meters

Slope Position Moisture:
A Shedding
B Normal
C Receiving
D Collecting
E Seepage

Moisture Regime:
A Hydric — 1 Hydric, 2 Sybhydric
B Hygric — 3 Hygric, 4 Subhygric
C Mesic — 5 Mesic, 6 Submesic
D Xeric — 7 Subxeric, 8 Xeric, 9 Very Xeric

Slope Position Macro:
A Apex
B Face
C Upper Slope
D Middle Slope
E Lower Slope
F Valley Floor
G Plain, Flat
H Plain, Rolling

Shape of Surface:
A Convex
B Straight
C Concave
D Flat

Percent of Plot Covered By:
Rock .....
Slash or Decaying Wood .....
Mineral Soil .....
Humus .....

Average Depth of Humus .....
.....

Bedrock type .....
.....

Age of Stand ..... years,
species used .....

Successional trend .....
Landform .....
Cause of Stand Establishment (history) .....
Present Land Use .....

Exposure Type:
A Wind
B Insolation
C Frost pocket
D Cold air drainage
E .....

Relative Rate of Succession:
A Rapid
B Faster than normal
C Normal
D Slower than normal
E Slow

Parent Material Texture:
A Coarse
B Medium
C Fine

Acidity of Parent Material: pH .....or
A Acid
B Neutral
C Basic

Salinity of Parent Material:
A Saline
1 weakly
2 moderately
3 strongly
B Not Saline

Calcareousness of Parent Material:
A Calcareous
1 weakly
2 moderately
3 strongly
B Not Calcareous

FOREST ECOLOGY FLORISTIC LIST

	% Cover	% Freq.
Grasses and Grasslike Plants:		
Bromus		
Calamagrostis rubescens		
Carex concinnoides		
Carex rossii		
Carex		
Carex		
Festuca idahoensis		
Festuca occidentalis		
Poa		
Poa		
Forbs:		
Actaea arguta		
Agoseris aurantiaca		
Agoseris glauca		
Antennaria racemosa		
Antennaria anaphaloides		
Antennaria		
Arabis holboilli		
Arenaria formosa		
Arnica cordifolia		
Arnica latifolia		
Aster conspicuus		
Aster		
Astragalus serotinus		
Castilleja miniata		
Cornus canadensis		
Delphinium bicolor		
Disporum hookeri		
Dodecatheon puberulum		
Epilobium angustifolium		
Epilobium paniculatum		
Equisetum arvense		
Fragaria bracteata		
Fragaria glauca		
Galium triflorum		
Gentiana amarella		
Goodyera oblongifolia		
Hieracium albiflorum		
Hieracium gracile		
Hieracium scouleri		
Hieracium umbellatum		
Lilium columbianum		
Linaea borealis		
Lupinus glacialis		
Lupinus sericeus		
Luzula glabrata		
Luzula parviflora		
Lycopodium annotinum		
Mitella breweri		
Mitella		
Osmorhiza nuda		
Pedicularis bracteosa		
Pedicularis racemosa		
Polygonum douglasii		
Pyrola asarifolia		
Pyrola chlorantha		
Pyrola secunda		
Ranunculus		
Smilacina racemosa		
Smilacina stellata		
Streptopus amplexifolius		
Thalictrum occidentale		
Vicia americana		
Viola		
Shrubs:		
Amelanchier alnifolia		
Arctostaphulos uva-ursi		
Ledum grandulosum		
Lonicera involucrata		
Lonicera utahensis		
Pachystima myrsinites		
Rhododendron albiflorum		
Ribes cereum		
Ribes lacustre		
Ribes		
Ribes		
Ribes		
Rosa		
Rubus pedatus		
Shepherdia canadensis		
Spiraea lucide		
Vaccinium caespitosum		
Vaccinium membranaceum		
Vaccinium scoparium		

	% Cover	% Freq.		% Cover	% Freq.
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
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.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....

SUMMARY OF TREE DATA

Plot No..... Plot Size..... Date.....

Species	Number of Trees % cover	per acre	Average DBH	Height	Total Basal Area	Basal Area per acre
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....

SITE INDEX TREES

Species..... Species.....

Tree	Height	Age	Diameter	Tree	Height	Age	Diameter
1.....	.....	.....	.....	1.....	.....	.....	.....
2.....	.....	.....	.....	2.....	.....	.....	.....
3.....	.....	.....	.....	3.....	.....	.....	.....
4.....	.....	.....	.....	4.....	.....	.....	.....
5.....	.....	.....	.....	5.....	.....	.....	.....
Total	.....	.....	.....	Total	.....	.....	.....
Average	.....	.....	.....	Average	.....	.....	.....

REMARKS

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RANGE ECOLOGY FLORISTIC LIST

	% Cover	% Freq.
Grasses and Sedges:		
Agropyron spicatum		
Bromus tectorum		
Carex douglasii		
Carex filifolia		
Carex praegracilis		
Festuca octoflora		
Festuca scabrella		
Koeleria cristata		
Poa pratensis		
Poa secunda		
Sporobolus cryptandris		
Stipa columbiana		
Stipa comata		
Stipa richardsonii		
Forbs:		
Achillea millefolium		
Agoseris glauca		
Allium cernuum		
Androsace occidentalis		
Antennaria dimorpha		
Antennaria parvifolia		
Arabis holboellii		
Astragalus lotiflorus		
Astragalus purshii		
Astragalus tenellus		
Balsamorhiza sagittata		
Calachortus macrocarpus		
Castellija lutescens		
Cerastium arvense		
Claytonia lanceolata		
Collinsia parviflora		
Comandra pallida		
Crepis atrabarba		
Delphinium bicolor		
Descurainia sophia		
Dodencatheon puberulum		
Draba verna		
Erigeron aureus		
Erigeron compositus		
Erigeron filifolius		
Erigeron pumilis		
Eriogonum heracleoides		
Fragaria glauca		
Fritillaria pudica		
Grillardia cristata		
Galium boreale		
Geranium viscosissimum		
Geum triflorum		
Heuchera cylindrica		
Heuchera ovalifolia		
Juncus balticus		
Lepidium densiflorum		
Lithophragma bulbifera		
Lappula echinata		
Linum lewisii		
Lithophragma parviflora		
Lithospermum ruderale		
Lomatium macrocarpum		
Lupinus sericeus		
Opuntia fragilis		
Oxtropis gracilis		
Phlox gracilis		
Plantago patagonica		
Ranunculus glaberimus		
Rhinanthus kyrollae		
Salsola kali		
Sedum stenopetalum		
Salaginella densa		
Taraxacum officinale		
Tragopogon pratensis		
Vicia americana		
Viola adunca		
Shrubs:		
Artemisia campestris		
Artemisia frigida		
Artemisia tridentata		
Chrysothamnus nauseosus		
Rosa spp		
Symphoricarpos alba		

	% Cover	% Freq.	REMARKS:

APPENDIX B

MODIFIED SOIL SERIES DESCRIPTIONS - SITE-SPECIFIC STUDY AREA

Modified Soil Series Descriptions - Site-Specific Study Area

The following modified soil series descriptions include the 70 soil units identified during the modified soil series mapping conducted within the site-specific study area by Canadian Bio Resources Consultants Ltd.

Soil Unit 1

The soil development identified within this unit is characteristic of a Carbonated Cumulic Regosol as defined by the Canada Department of Agriculture[17] These soils are derived from extremely variable textured alluvial fan deposits ranging from coarse gravelly materials to deep loam or silt loam deposits of greater than 76 cm (30 in.). The intimate association of the coarse and fine materials and limitation in the scale of mapping precludes independent identification of these variations within the unit. The soils in general are strongly calcareous and it appears that salinity within most of the unit is also high. Topography is reasonably flat with slopes of zero to six percent except within those areas adjacent to the creeks where recent erosion channels have altered the general topography. The drainage varies from excessively drained to poorly drained depending on the actual location. In general, high water tables only exist during spring freshets and supplemental irrigation is required for optimum plant growth during the summer. At present, much of this land is developed for hay production and supports some of the best crop yields found in the valley. This soil unit consists of three separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 0.91 km^2 (225 acres).

Soil Unit 2

The soil development identified within this unit is characteristic of a Carbonated Humic Gleysol as defined by the Canada Department of Agriculture[17] These soils are derived from organic and alluvial stream deposits to depths of greater than 102 cm (40 in.). The surface organic layer is variable, ranging in depth from about 14 cm (5.5 in.) to approximately 38 cm (15 in.). The degree of decomposition is also variable with the shallow organic deposits

generally humic in nature and those areas with cappings greater than 20 cm (8 in.) usually mesic or fibric in nature. The alluvial soil deposits are predominantly silty clay and are generally strongly gleyed and massive. Drainage throughout the unit is very poor with early spring flooding occurring throughout the majority of this unit. Topography of the area is flat to depressional with occasional creek channels meandering throughout the unit. At present, portions of the unit have been cleared and utilized for hay production with the remainder left in its native state of fairly dense stands of willow. This soil unit consists of three separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 1.11 km^2 (274 acres).

Soil Unit 3

The soil development identified within this unit is characteristic of a Carbonated Gleysol as defined by the Canada Department of Agriculture[17]. These soils are derived from fine-textured alluvial stream deposits. The texture varies from a loam in the surface 15 cm (6 in.), to a silty clay in the underlying parent materials. These soils are strongly effervescent throughout the soil profile and, although not chemically tested, also appear to possess high salinity. Drainage within the unit varies from poorly to moderately poorly drained with the underlying deposits strongly gleyed and of a very massive structure. Topography is generally flat with slopes less than five percent, except in those areas of existing creek channels. The area is presently largely developed for forage hay production with the better drained areas supporting good stands of domestic crop species. Those areas too small in size to develop agriculturally are used for native grazing. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 1.96 km^2 (484 acres).

Soil Unit 4

The soil development of this unit is characteristic of an Orthic Regosol as defined by the Canada Department of Agriculture[17]. These soils were derived from recent alluvial deposits associated with Hat Creek. The unit, in general,

has a variable depth loam to silt loam capping, ranging from less than 15 to 76 cm (6 to 30 in.). The underlying deposits are generally coarse-textured, gravelly and stoney materials, the depth of which varies with location but generally extends beyond 0.9 m (3 ft.) in depth. The soils are effervescent throughout, but this is not considered as a major limitation to vegetative growth. Topography is essentially flat, apart from the actual erosion channels which dissect much of the unit. Those areas with moderate silt loam cappings and of sufficient size are presently used for hay production while the coarser-textured and eroded areas are predominantly used only as supplemental grazing areas. This soil unit consists of three separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 1.37 km^2 (339 acres).

Soil Unit 5

The soil development identified within this unit is predominantly characteristic of a Degraded Eutric Brunisol with minor inclusions of an Orthic Dark Brown Chernozem as defined by the Canada Department of Agriculture[17]. The soil solum is generally greater than 46 cm (18 in.) with the underlying parent material derived from glacial outwash deposits. The surface 61 to 91 cm (24 to 36 in.) is generally of a loam to silt loam texture overlying coarse gravels. The surface soils are relatively stone free, although considerable stoniness is evident in the underlying outwash deposits. Although only weakly to moderately effervescent in the surface horizon, the soils have a layer of carbonate enrichment evident at approximately 0.8 m (2.5 ft.). Topography within the unit is uniform with slopes ranging from five to 10 percent. For the most part, these soils are excessively drained but, when irrigated, support good crop yields. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 0.14 km^2 (.35 acre).

Soil Unit 6A

The soil development identified within this unit consists of both a Degraded Eutric Brunisol and an Orthic Dark Brown Chernozem as defined by the Canada

Department of Agriculture[17]. Those areas characteristic of the Degraded Eutric Brunisol are evident in the more densely treed locations, while the Orthic Dark Brown Chernozemic developments are evident in the open grasslands. Soil development is generally moderate to shallow, extending to depths of only 36 to 46 cm (15 to 18 in.). The soil profile consists of approximately 36 cm (15 in.) of silt loam to silty clay loam slopewash and windblown materials over silty clay loam textured kame-like deposits. Underlying these deposits at greater depths are coarse-textured outwash deposits with variable silt and sand content. Stone content is generally of minor significance except in the underlying outwash deposits. The soils are moderately effervescent within the surface 25 to 30 cm (10 to 12 in.) and strongly effervescent in the underlying materials with evidence of free carbonates in the kame and outwash deposits. Topography of the unit varies from two to 10 percent with a majority of the unit suitable for cultivation. The area is presently utilized only for grazing but, if irrigated, has the potential to be utilized for hay production. This soil unit consists of 12 separate mapped areas; nine located in the upper Hat Creek lowlands and two located near Houth Meadows. The total area defined is approximately 2.69 km^2 (665 acres).

Soil Unit 6B

The soil developments identified within this unit are equivalent to those outlined in Soil Unit 6A except for those areas where erosion has exposed the underlying outwash deposit and no soil development exists. In general, the soil development is much shallower than found in Unit 6A with the depth of topsoil being less than 25 cm (10 in.). Textures of the surface deposits are similar to those described in Unit 6A with the underlying outwash gravels occurring within 46 to 51 cm (13 to 20 in.) of the surface. The soils are moderately effervescent at the surface with the underlying parent materials strongly effervescent and free carbonates evident on the underside of most gravel deposits. Topography of the unit has slopes greater than 20 percent with no potential for cultivation. Present use is mainly for domestic grazing or for gravel borrow areas. This soil unit consists of three separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 0.86 km^2 (213 acres).

Soil Unit 7

This unit is characteristic of an Orthic Dark Brown Chernozem as defined by the Canada Department of Agriculture[17]. The soils consist of moderately deep silt loam deposits overlying coarser-textured outwash deposits. The topsoil materials extend to depths greater than 76 cm (30 in.) and are generally of a silt loam texture throughout. The soils are moderately effervescent within the top 20 cm (8 in.) and strongly effervescent throughout the underlying deposits. Topography of the unit is primarily flat with slopes less than five percent. The unit is essentially stone free and drainage is good with droughty conditions existing without irrigation. At present, the unit is used mainly for grazing but, with irrigation, would be well suited for hay production. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.54 km^2 (133 acres).

Soil Unit 8

The soil development identified within this unit is characteristic of a Calcareous Dark Grey Chernozem as defined by the Canada Department of Agriculture[17]. The soils are very shallow, derived primarily from colluvial and slopewash deposits overlying shallow till or bedrock. The soil solum for the majority of the unit is less than 25 cm (10 in.) and of a sandy loam to loam texture throughout. Considerable stoniness and angular rock debris are evident, particularly at the base of the steeper sloping areas. Topography is limiting throughout the unit with slopes of 15 to 20 percent common for most of the area. The soils are strongly effervescent, although evidence of free carborates is limited. The underlying till materials are generally compact and strongly effervescent. The soil appears extremely droughty but the limiting topography and excessive rock content of the unit would preclude any form of supplemental irrigation within the unit. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 1.25 km^2 (309 acres).

Soil Unit 9

The soil development identified within this unit is characteristic of a Calcareous Dark Grey Chernozem as defined by the Canada Department of Agriculture[17]. The soil solum is generally less than 38 cm (15 in.) and is of a loam to silt loam soil texture. This texture tends to grade from a loam to a silt loam with downward progression of the soil profile towards the parent material. While only moderately effervescent in the surface 20 to 25 cm (8 to 10 in.), the underlying C-horizon and parent materials are strongly effervescent with free carbonates evident. The underlying parent material is compact, derived apparently from basal till materials, with only limited root penetration evident. The unit is presently forested with complex slopes of five to 15 percent, restricting its development for intensified agricultural development. Moderate stone content throughout the unit further reduces its suitability for agricultural use other than its native grazing potential. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.17 km^2 (42 acres).

Soil Unit 10

The soil development identified within this unit is primarily characteristic of a Degraded Eutric Brunisol with minor inclusions of an Orthic or Gleyed Dark Grey Chernozem as defined by the Canada Department of Agriculture[17]. Those areas characteristic of the Degraded Eutric Brunisol development are evident in the more densely forested areas while the Orthic and Gleyed Dark Grey Chernozems are located in the seepage areas and open grasslands of the unit. The soil solum generally extends to greater than 46 cm (18 in.) and is of a loam to silt loam texture throughout. The underlying parent material is of a similar texture but generally dense and compact, derived from basal till deposits. Topography over the majority of the unit is reasonably flat with slopes generally less than five percent. The majority of the unit is moderately well drained, although areas of imperfectly drained soils are evident in some of the seepage locations within the unit. These particular soils are strongly calcareous with visual evidence of salt accumulation in some of the seepage and depressional locations. The stone content is variable throughout the unit

ranging from an occasional stone to moderate stoniness. The unit is presently under a sparse and patchy forest canopy and used primarily for its native grazing potential. It would appear that the unit has the potential for use as an improved pasture area if irrigated and seeded with domestic grass species. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 2.34 km^2 (578 acres).

Soil Unit 11

The soil development within this unit is predominantly Lithic Black Chernozem with minor inclusions of Degraded Eutric Brunisol development as defined by the Canada Department of Agriculture[17]. The Chernozemic development occurs on the shallow open grassland areas while the Degraded Brunisol development occurs in the forested and generally deeper topsoil areas located within the depressional areas of the unit. The soil solum is generally 20 to 25 cm (8 to 10 in.) over most of the unit, although it does extend to 46 to 51 cm (18 to 20 in.) in some of the depressional areas. The soil material within this zone is of a loam to sandy loam texture and is underlain by either lithic or basal till deposits. Topography is complex with slopes of two to 12 percent common throughout the unit. Surface drainage is excessive and water penetration within these soils is largely restricted due to their very shallow depths. These areas, while presently overgrazed, are considered to have a high native grazing potential. Topography and limiting soil depths restrict more intensive agricultural development within the unit and irrigation is not considered feasible. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 1.62 km^2 (400 acres).

Soil Unit 12

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The soils are generally very shallow and overlie dense compacted till deposits. The soil solum is generally 20 to 30 cm (8 to 12 in.) in depth and of a loam to sandy loam texture throughout the soil profile. The underlying till

deposits are of similar texture but grade into silt loam to silty clay loam textures at deeper depths. Topography in the area is undulating with slopes of three to nine percent common. Drainage is excessive and, without irrigation, droughty conditions exist during much of the growing season. Stone content is limited and would not present a major restriction to agricultural development of these lands. The soils are generally moderately effervescent throughout the soil profile but do not appear to be a major restriction to vegetative growth. The area is presently sparsely treed and, although the shallow soil depth limits intensive cultivation, the unit would appear suitable for development as irrigated pasture land. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 1.74 km^2 (430 acres).

Soil Unit 13

The soil development identified within this unit is predominantly a Calcareous Black Chernozem with minor areas more characteristic of a Saline or Carbonated Black Chernozem as described by the Canada Department of Agriculture[17]. The soils are generally found to have a moderately deep solum with the soil capping generally extending from 61 to 76 cm (24 to 30 in.) below the surface. The underlying parent material is dense and compact, derived from ice contact till deposits. Soils are generally of a loam texture within the surface horizon and a silt loam to silty clay loam in the lower portions of the soil solum and parent materials. The soils are strongly effervescent throughout the soil profile, with the less detailed soil association investigation reporting strongly saline conditions also prevalent within the unit. Topography is fairly uniform with slopes of five to 10 percent common. The area is precominantly stone free although occasional stones and boulders are evident within the underlying till deposits. Although generally well drained, some regions show evidence of intermittent seepage. A major portion of this unit is presently developed for forage production and irrigated by either sprinkler or flood irrigation. This soil unit consists of five separate mapped areas: four located in the upper Hat Creek lowlands and one located in the Trachyte Hills near Harry Lake. The total area defined is approximately 5.25 km^2 (1297 acres).

Soil Unit 14

The soils within this unit are primarily characteristic of an Orthic Dark Brown Chernozem with some depressional and seepage locations characteristic of Calcareous or Saline Black Chernozems as defined by the Canada Department of Agriculture[17]. The depth of the soil solum is quite variable, ranging from depths of 20 to 25 cm (8 to 10 in.) on the knolls to depths greater than 46 cm (18 in.) in some of the depressional areas. Erosional effects, likely resulting from previous overgrazing, are evident on many of the ridges with underlying C-horizons exposed in those locations. Surface soil textures are generally of a loam to sandy loam with the underlying horizons and parent materials of a silt loam to silty clay loam texture. The unit is strongly effervescent with certain areas apparently also strongly saline. Stone content is variable but would not present a major problem in development of these land areas. Topography is very complex and would present a major limitation to regular cultivation of the unit. Slopes in general range from five to 15 percent with a moderate rolling micro relief. The lands are presently used primarily for their native grazing potential, although some areas are now being developed for improved pasture lands. This soil unit consists of 10 separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 8.22 km^2 (2031 acres).

Soil Unit 15

The soils within this unit are characteristic of an Orthic Dark Brown Chernozem as defined by the Canada Department of Agriculture[17]. The soil solum is approximately 46 cm (18 in.) in depth and of a loam to silt loam texture. The soils are strongly effervescent throughout the soil profile with free carbonates evident within the C-horizon at a depth of approximately 30 to 38 cm (12 to 15 in.). The underlying parent materials are compact till deposits exhibiting restricted root and water penetration. Stone content within the soil solum is relatively sparse, although more concentrated within the underlying parent materials. Topography is gently sloping within the majority of the unit having slopes ranging from five to 10 percent. Due to the shallow depth and excessive surface drainage, these soils are generally very droughty during

much of the growing season, but surface ponding does occur in the depressions during the wetter periods of the year. At present, the majority of the land area is used for grazing but, if irrigated, would have the potential for forage production. This soil unit consists of 11 separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 4.22 km^2 (1043 acres).

Soil Unit 16

The soil development identified within this unit is characteristic of a Carbonated Black Chernozem as defined by the Canada Department of Agriculture[17]. The soil solum is approximately 46 to 64 cm (18 to 25 in.) in depth, underlain by compacted till deposits. Soil textures are of a loam to sandy loam for the surface 15 cm (6 in.) and grade into a loam to silt loam for the underlying horizons and parent materials. The surface horizon is relatively stone free, while the underlying parent materials are somewhat variable in stone content. Drainage is imperfect with evidence of restricted drainage in the lower soil horizons. These soils are strongly effervescent throughout and appear also to be somewhat saline. Topography is generally flat to depressional, with slopes less than five percent. These soils are primarily used for grazing but would have the potential to be utilized for forage production, if irrigated, where elevation or climatic constraints are not restricting. This soil unit consists of 12 separate mapped areas; two located in the upper Hat Creek lowlands, three located near Houth Meadows, four located in the Medicine Creek watershed and three located south of Cornwall Creek and west of Highway #1. The total area defined is approximately 0.48 km^2 (119 acres).

Soil Unit 17

The soil development within this unit is primarily an Orthic Dark Brown Chernozem with minor inclusions of Degraded Eutric Brunisol and Carbonated Black Chernozem development as defined by the Canada Department of Agriculture[17]. The unit, however, has been subjected to excessive erosion apparently as a result of previous overgrazing and, thus, much of the area identified as characteristic of an Orthic Dark Brown Chernozem now shows evidence in only

the underlying C-horizon, making this classification somewhat misleading in terms of its actual taxonomic description. The Degraded Eutric Brunisol development is generally confined to the more densely treed areas, while the Carbonated Black Chernozem development, similar to that described within Soil Unit 16, is evident in the depressional seepage areas. The soil solum is very shallow and largely eroded in the exposed areas. The soil solum generally does not exceed 46 cm (18 in.) and, on some of the knolls, is completely eroded. Soil texture varies between a silt loam to silt clay loam with some of the depressional areas exhibiting a 15 to 20 cm (6 to 8 in.) loam capping. Underlying till deposits are also of a silt loam to silty clay loam texture. In general, the unit is moderately stoney with numerous stones and boulders scattered throughout the profile. Drainage is variable, being excessive on the knolls and steeper sloping areas, and poor in the depressional areas where ponding generally occurs. Topography is complex with slopes ranging from five to 10 percent. The soils are strongly effervescent throughout the soil profile with free carbonates evident in the C-horizon. The area is presently utilized primarily for native grazing with topography and stoniness being the major limitations to the restriction of regular cultivation. If irrigated, the unit would have a potential for improved pasture use but would not be suitable for harvesting other than through grazing. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 3.23 km^2 (798 acres).

Soil Unit 18

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The soil solum varies in depth between 46 to 61 cm (18 to 24 in.) and is underlain by compacted ablation till deposits. Soil textures vary within the soil profile with the surface soil horizons having a loam to sandy loam texture to depths of approximately 15 to 20 cm (6 to 8 in.). In the lower soil profile, the soils are of a silt loam to silty clay loam texture which is also characteristic of the soil parent materials. Although stone content is patchy, the majority of the unit is relatively stone free. Topography in

the area is gently undulating with slopes of two to five percent. The unit is weakly to moderately effervescent in the surface of 20 to 25 cm (8 to 10 in.) and strongly effervescent in the lower profile and parent materials. At present, the unit is sparsely treed and is used predominantly for grazing. However, with irrigation, this area would have the potential to be developed for improved hay production. This soil unit consists of two separate mapped areas located in the upper Hat Creek lowlands. The total area defined is approximately 2.26 km^2 (558 acres).

Soil Unit 19

The soil developments identified within this unit consist of both a Degraded Eutric Brunisol development and an Orthic Dark Brown Chernozemic development as defined by the Canada Department of Agriculture[17]. The Brunisolic development occurs in the forested localities of this unit, while the Dark Brown Chernozemic developments are located in the grassland areas. The surface materials are of a wide textural range, generally of a silty clay matrix with moderate stone, boulder and gravel content incorporated. The underlying deposits occurring at around 30 cm (12 in.) in depth are heterogeneous ablation till deposits or kame deposits and of a silty clay loam texture. The soils are strongly effervescent with evidence of free carbonates between 30 and 76 cm (12 to 30 in.). Boulder content, while reasonably sparse, occurs throughout the unit. Drainage is primarily excessive with droughty conditions evident throughout most of the growing season. Generally, topography is fairly steep with slopes between seven and 15 percent. The unit is presently utilized for grazing with some recent logging activity also evident in some locations. If irrigated, this unit could possibly be considered for improved pasture use. This soil unit consists of nine separate mapped areas; five located in the upper Hat Creek lowlands, one located in the Trachyte Hills near Harry Lake, two located west of Highway #1 and north of Cornwall Creek, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 5.24 km^2 (1295 acres).

Soil Unit 20

This particular unit has been broken down into a number of subunits, based on a more detailed soil assessment of this area for the purpose of assessing possible reclamation procedures pertinent to the region. In general, the soils of this area are derived from glacial lacustrine deposits with soil development either Regosolic, Chernozemic or Brunisolic in nature. Depth of the soil deposits is variable with volcanic rock outcropping evident in some locations. A texture description of each subunit is reported below.

Soil Unit 20A

This subunit denotes an active slide region within the unit. Soil development is difficult to assess as active movement in the area has disturbed most of the soil development, however, it is basically Regosolic in nature. Large cracks and fissures are evident throughout the unit, extending to depths of 1.5 m (5 ft.). The soil material is of a clay texture with a high portion of expanding clay particles. The soils are strongly effervescent throughout the top 1.2 m (4 ft.) although somewhat reduced at greater depths. Topography is gently undulating with slopes of five to nine percent. Plant growth in the area is limited, with the land having very restricted crop potential. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.18 km^2 (44 acres).

Soil Unit 20B

The subunit is also Regosolic in soil development, occupying a depressional area within the region. The soil is strongly effervescent throughout and the presence of large salt crystals throughout the profile also indicates high salinity, although no actual chemical analysis was made. The soil material is essentially of a clay texture to depths greater than 1.2 m (4 ft.). These clay materials have particular expanding qualities as indicated by the excessive cracking in the surface deposits and massive nature of the moist underlying deposits. Plant growth is very limited and the unit has very limited crop potential. Establishment of any form of vegetative growth on these materials is extremely difficult and existing vegetation should not be

destroyed where possible. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.07 km^2 (17 acres).

Soil Unit 20C

The soil development identified within this unit is characteristic of an Orthic Eutric Brunisol as defined by the Canada Department of Agriculture[17]. Generally, the topsoil layers consist of about 20 cm (8 in.) of granular silty clay loam to clay loam lying over about 15 cm (6 in.) of strong, coarse blocky to columnar clay. Dense and compacted clay at depths of 36 to 46 cm (14 to 18 in.) overlies volcanic rock. The effervescence of the soil is moderate to strong and few stones are present. The very steep slopes, generally in excess of 15 percent throughout this subunit, limit potential for crop production. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.18 km^2 (44 acres).

Soil Unit 20D

The soil development identified within this unit is characteristic of an Orthic Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The depth of the topsoil is quite variable but generally it consists of about 10 cm (4 in.) of gritty silt loam overlying about 20 cm (8 in.) of gritty silt loam to silty clay loam. There is a buildup of carbonate enrichments existing in the soils between about 10 to 30 cm (4 to 12 in.). Silty clay to clay textured soils exist from 30 to 51 cm (12 to 20 in.) containing an excessive enrichment of carbonates and overlies dense compacted clay-textured till deposits. The volcanic rocks which exist below the clay are found within the majority of the unit, below 1.5 m (5 ft.). A few boulders exist in this soil, mostly occurring at the surface. The topography is variable, with slopes of seven to 10 percent. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 1.30 km^2 (321 acres).

Soil Unit 20E

The soil development identified within this unit is characteristic of a Regosolic-Orthic Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The topsoil in this unit is weakly effervescent, has a platey to granular soil structure and a silt loam texture. It is generally very shallow, averaging about 8 cm (3 in.) in depth. The remainder of the profile is a strongly effervescent clay till material which contains excessive carbonate enrichment between about 20 to 41 cm (8 to 16 in.) and is densely compacted below this depth. The topography is complex and there is limited potential for crops. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.21 km^2 (52 acres).

Soil Unit 21

The soil development identified within this unit is characteristic of an Orthic Dark Brown Chernozem with minor inclusions of a calcareous Black Chernozem and a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The soils are derived from silty clay glacial till deposits with the topsoil development generally less than 30 cm (12 in.) in depth. Surface textures for the unit are a silt loam. The parent material is relatively free of boulders, however, considerable boulder content is evident within the surface deposits. The unit is strongly effervescent throughout with free carbonates evident in the lower soil profile below the 25 cm (10 in.) depth. The unit has a hummucky, gently undulating topography with slopes ranging from five to nine percent. At present, the area is utilized for grazing but, with irrigation, would have a potential for development of improved pasture for spring and fall grazing. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.58 km^2 (143 acres).

Soil Unit 22

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol development as defined by the Canada Department of

Agriculture[17]. The soil solum is shallow with the topsoil seldom extending beyond 30 cm (12 in.). The underlying parent materials are compact glacial till deposits of a silty clay loam texture. Texture of the surface soils is a silt loam which grades into a silty clay loam with depth. Topography in the area is complex with numercus gullies and slopes ranging between five and 15 percent. The area is relatively stone free with occasional boulders evident on the soil surface. The soils are effervescent throughout with carbonate enrichment evident below 20 cm (8 in.). The area is presently utilized for grazing and limited logging and has little or no potential for improved agricultural use. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.95 km^2 (235 acres).

Soil Unit 23

The soil development identified within this unit is characteristic of an Orthic Dark Brown soil development as defined by the Canada Department of Agriculture[17]. The topsoil material extends to about .6 m (2 ft.) and the underlying material is silty clay loam till deposits. The surface soil texture is a loam to silt loam for 10 to 15 cm (4 to 6 in.) with the remaining topsoil material of a silt loam to silty clay loam containing variable degrees of gravel content. The soil is strongly effervescent throughout with free carbonates evident below 38 cm (15 in.). The unit is gently undulating with slopes in the range of five to nine percent. Stone content is generally found to be of minor significance. At present, the unit is utilized for grazing but, if irrigated, would have the potential to be used for hay production. This soil unit consists of a single mapped area located in the upper Hat Creek lowlands. The total area defined is approximately 0.19 km^2 (47 acres).

Soil Unit 24

The soil development identified within this unit is predominantly characteristic of a Rego Brown Chernozem as defined by the Canada Department of Agriculture[17]. These soils are derived from shallow eroded till deposits in areas of moderate to steeply sloping topography. The topsoil materials are generally

very shallow, being less than 10 cm (4 in.) in depth. In some of the less severely eroded areas there is evidence of an intermittent fine sandy loam to silt loam textured loess capping but the majority of the area consists of a gravelly loam to gravelly sandy loam textured surface horizon derived from weathered till deposits. The underlying parent materials are calcareous, compacted, glacial till deposits containing moderate to heavy concentrations of gravels and stones. These subsoil materials show little evidence of root and water penetration with a buildup of free carbonates evident at the interface of the compact subsoil deposits occurring at approximately 20 to 25 cm (6 to 8 in.). The topography for much of the area has slopes of 15 to greater than 30 percent, and surface erosion channels have added to the complexity of the micro topography. While internal drainage of the unit is restricting, the semiarid climatic conditions and shallow topsoil of the unit result in severe droughty conditions for most of the growing season. Minor areas of rock outcropping exist but are of insignificant size to map independently. At present, the majority of these areas are native grasslands. However, the apparent previous overgrazing has greatly reduced the overall vegetative growth on these areas to the extent that present crop cover is very sparse. This soil unit consists of 10 separate mapped areas; three located west of Highway #1 and north of Cornwall Creek and seven located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 1.52 km^2 (376 acres).

Soil Unit 25

This soil unit is characteristic of two distinct soil developments. They include an Orthic Brown Chernozem and Rego Brown Chernozem as defined by the Canada Department of Agriculture[17]. The Orthic Brown Chernozem occupies approximately 60 percent of the unit, while the Rego Brown Chernozem occupies the remaining 40 percent. Because of their intimate association, these soil developments are mapped together in a soil complex. The Orthic Brown development occurs predominantly in the depressional and more gently sloping areas, while the Rego Brown development generally occurs in the steeply sloping and eroded areas. Those areas of Orthic Brown development have approximately 15 to 25 cm (6 to 10 in.) of fine sandy loam to silt loam textured loess

capping overlying weathered and compact till deposits. The topsoil is generally stone free but the underlying till deposits have moderate to heavy concentrations of stones and gravels. A layer of free carbonate enrichment occurs between 25 to 46 cm (10 to 18 in.) with the soil texture of this zone generally silt loam. The compact parent materials have a gravelly silt loam to gravelly loam texture with considerable stoniness. These materials show little evidence of root or water penetration. In the areas of Rego Brown development, the soils are generally very shallow with topsoil development generally less than 10 cm (4 in.) in depth. These topsoil materials are generally derived from weathered till deposits of a gravelly loam to gravelly silt loam texture. Surface stoniness is much more prevalent in these areas than those of Orthic Brown development. Free carbonate enrichment occurs approximately 15 cm (6 in.) below the surface and often extends to depths greater than 46 cm (18 in.). The compact underlying till deposits are strongly calcareous and contain moderate to high concentrations of stones and gravels. They show little evidence of root and water penetration and the surface drainage patterns indicate that excess precipitation is shed as surface runoff, rather than lost to deep percolation. Topography for most of the unit varies from gently to strongly rolling with the micro topography being hummocky and dissected by numerous surface drainage channels. Slopes range from five to greater than 20 percent over the majority of the soil unit.

At present, the majority of the area is under native grassland conditions. Vegetation growth is relatively sparse, particularly in the more severely eroded areas and regions of previous overgrazing. While portions of the unit could be used as improved pasture land, the area is generally unsuitable for harvesting. Any irrigation would require careful management to prevent ponding, salt or carbonate buildup in depressional areas, and/or excessive erosion of steeper sloping areas. This soil unit consists of eight separate mapped areas; five located west of Highway #1 and north of Cornwall Creek and three located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 7.10 km^2 (1754 acres).

Soil Unit 26

The soil development identified within this unit is characteristic of an Orthic Brown Chernozem as defined by the Canada Department of Agriculture[17]. These soils are derived primarily from glacial till deposits capped by a thin layer of fine sandy loam to silt loam textured loess deposits. The surface materials are primarily stone free but the underlying deposits contain moderate to heavy stone and gravel concentrations. In those areas of disturbances or excessive erosion, stones have been exposed to the surface and would restrict extensive cultivation in these locations. The depth of the loess deposits is seldom found to be greater than 25 cm (10 in.) in depth and generally ranged from 15 to 20 cm (6 to 8 in.). A zone of free carbonate enrichment exists at approximately 25 cm (10 in.) and occasionally extends to a depth of 46 cm (18 in.). These deposits are exceedingly stoney and have a gravelly loam to gravelly silt loam textured soil matrix. The underlying compacted till deposits are of a gravelly loam to gravelly silt loam texture and strongly calcareous. They show little evidence of root and water penetration and the surface drainage patterns indicate that excess precipitation is shed as surface runoff, rather than lost to deep percolation. The topography is primarily gently rolling with slopes ranging from five to 10 percent. The micro topography is fairly uniform, apart from the occasional drainage channel dissecting the unit.

At present, the majority of the area is under native grassland conditions. Some of the flat, relatively stone free areas have a potential for hay or forage production and the remaining area has a potential for improved pasture use. Any irrigation of these areas would require careful management to insure an acequate water balance and prevent undesirable seepage or erosional problems that could result in deterioration of existing soil conditions. Vegetation growth appears reasonably abundant except for a few locations where obvious overgrazing has occurred. While some areas hold some potential for improved pasture and hay production, they are presently fairly productive grassland areas and would appear best suited to range use. This soil unit consists of three separate mapped areas; one located west of Highway #1 and north of Cornwall Creek and two located west of Highway #1 and south of Cornwall Creek.

The total area defined is approximately 1.22 km^2 (302 acres).

Soil Unit 27

The soil development identified within this unit is characteristic of a Carbonated Black Chernozem as defined by the Canada Department of Agriculture[17]. These soils are derived from moderately fine-textured fan or slopewash deposits overlying compact glacial till deposits at greater depth. They generally experience a fluctuating high water table during a portion of the year but show little evidence of mottling or gleying within the soil profile. The Ah-horizon is fairly thick, ranging in depth from 25 to 38 cm (10 to 15 in.) and of a loam to silt loam texture. Although no evidence of free carbonates exists at the surface, the Ah-horizon is generally strongly calcareous. Underlying the Ah-horizon is approximately 15 to 20 cm (6 to 8 in.) of unconsolidated silt loam textured deposits similar to the Ah-horizon but containing less organic matter content. These deposits are primarily stone free and strongly calcareous. Below these materials are compact ice contact or glacial till deposits containing moderate to heavy concentrations of stones and gravels. These materials show little evidence of root or water penetration and are also strongly calcareous. A perched water table is evident at the soil interface of these compact materials which appears to exist for a minor portion of the year.

At present, these soils are largely cleared and utilized for hay production. The hay is usually an alfalfa, grass, and legume mix rather than strictly alfalfa as the periodic high water tables tend to result in a much quicker than average deterioration of the alfalfa crop. Under irrigation and improved drainage, these areas would be capable of good to excellent yields of alfalfa and other hay mixes. Careful management to insure there is no buildup of excess salts or carbonates from surrounding irrigated lands is also important to insure against deterioration of these soil materials. This soil unit consists of three separate mapped areas; one located west of Highway #1 and north of Cornwall Creek, and two located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 1.15 km^2 (284 acres).

Soil Unit 28

The soil development identified within this unit is characteristic of a Rego Brown Chernozem as defined by the Canada Department of Agriculture[17]. The soils are derived from variable textured alluvial fan deposits. These materials are of a gravelly sandy loam texture with excessive stone content at the fan apex and in the lower soil profile. The fan aprons and less severely sloping regions of the unit have a finer textured loam to silt loam capping of 15 to 30 cm (6 to 12 in.) overlying coarse-textured materials. A zone of carbonate enrichment generally exists between 20 to 25 cm (8 to 10 in.) below the surface. Topography within the unit can range from less than five percent at the fan aprons to greater than 20 percent at the apex. The micro topography is fairly uniform with the exception of an occasional drainage channel. Generally, these soils have only moderate to low water holding capacities and are usually extremely droughty. While salts may exist within the subsoil materials, they would appear to exist below the depth at which they would be harmful to plants.

Much of the area is presently in native grasslands. Productivity appears generally low, due largely to overgrazing and the excessive coarseness of the existing soil materials. Under irrigation, portions of the less steeply sloping areas and fan aprons would have the potential for development as improved pasture land or haylands. Care must be exercised to prevent destruction of the thin topsoil capping. Cultivation of these areas should be minimized and irrigation regulated so as to prevent excessive erosion and insure against harmful buildup of salt and carbonate levels in the surface soil horizons. This soil unit consists of nine separate mapped areas; one located in the Medicine Creek watershed, four located west of Highway #1 and north of Cornwall Creek, and four located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 0.91 km^2 (225 acres).

Soil Unit 29

The soil development identified within this unit is characteristic of a Rego Brown Chernozem as defined by the Canada Department of Agriculture[17]. These soils are derived from moderate to deep, highly eroded till deposits. Topsoil

materials are very shallow with depths primarily less than 10 cm (4 in.). These materials are of a loam to gravelly silt loam texture with occasional stones at or near the soil surface. A zone of free carbonate enrichment exists at approximately 15 cm (6 in.) and in areas of active or recent erosion they are exposed to the surface. The underlying compact till deposits are strongly calcareous with moderate to high concentrations of stones and gravels. Texture of these depcsits are a gravelly loam to gravelly silt loam and with their compacted nature show little evidence of root and water penetration. Slopes range from 15 percent to greater than 30 percent with an extremely complex micro topography resulting from the numerous surface drainage channels dissecting the unit. These soils are rapidly drained and extremely droughty with vegetation growth moderately sparse.

At present, these areas are in native grasslands and utilized largely for domestic grazing. They are particularly susceptible to overgrazing which can lead to erosion and damage to the shallow topsoil deposits. They are unsuitable for improved crop use due to the severely restricting topography and should be left in their native grassland state wherever possible. This soil unit consists of five separate mapped areas; three located west of Highway #1 and north of Cornwall Creek, and two located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 3.04 km^2 (751 acres).

Soil Unit 30

The soil development identified within this unit is characteristic of a Salire Gleysol as defined by the Canada Department of Agriculture[17]. These soils are generally derived from fine-textured, stone free and slopewash deposits. They show evidence of a permanent and often fluctuating high water table with apparent salt and carbonate enrichment occurring within the surface soil horizons. Texture of these soils ranges from loam to silt loam with occasional bands of silty clay loam materials. A 5 to 8 cm (2 to 3 in.) layer of well decomposed organic matter can often exist at the soil surface for portions of the unit. Topography of these areas is generally depressional

to very gently sloping with slopes less than two percent. These areas are poorly drained, largely resulting from seepage and poor outlet conditions. At present, they support stands of aspen and understory swamp vegetation such as reeds, sedges, meadow foxtail and other water-tolerant weeds.

In their nonreclaimed state, these soils hold little value for agriculture except possibly as low quality grazing lands. However, with proper drainage and irrigation to leach out the present excess salt and carbonate concentrations, these soils would have good agricultural potential. Although it may prove too costly to completely eliminate the high water table, drainage improvements would enable much of these lands to be developed for productive hayland supporting good yields of grass and water tolerant legumes. This soil unit consists of two separate mapped areas; located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 0.22 km^2 (54 acres).

Soil Unit 31

The soil developments identified within this unit are characteristic of a Degraded Eutric Brunisol and a Rego Brown Chernozem as defined by the Canada Department of Agriculture[17]. These soils occur mainly on the valley walls of major erosion channels. The topsoil cappings are very shallow, being less than 10 cm (4 in.) in depth and of a loam to silt loam texture. Underlying these topsoil materials are compact strongly calcareous till deposits of considerable depth, except for minor areas which may show evidence of rock outcropping. The Degraded Eutric Brunisol development is associated with sparsely treed areas while the Rego Brown Chernozem development is associated with the open grasslands. The till deposits are of a gravelly sandy loam to gravelly loam texture with moderate to heavy stone content. These soils are rapicly drained and generally droughty. They support a sparse to open tree canopy with underlying herbs and grasses.

At present, they support limited grazing potential and require careful management to avoid overgrazing and depletion of the grass and herb species. These areas are incapable of supporting improved crop use due to the limiting

topography which varies between 30 and 50 percent for the majority of the land unit. If overgrazed, these areas are subject to erosion and depletion of the valuable topsoil materials, leading to difficulties in reestablishment of vegetative growth. This soil unit consists of eight separate mapped areas; three located in the upper Hat Creek lowlands, one located near Houth Meadows, one located in the Trachyte Hills near Harry Lake, one located west of Highway #1 and north of Cornwall Creek and two located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 1.68 km^2 (415 acres).

Soil Unit 32

The soil development identified within this unit is characteristic of a Lithic Brown Chernozem. There is considerable evidence of rock outcropping and colluvial rock debris associated with the unit. The soils are derived primarily from shallow till deposits capped by a thin layer of medium to fine textured loess material. The topsoil materials are of a fine sandy loam to silt loam texture and seldom more than 8 to 10 cm (3 to 4 in.) in depth. Below the topsoil capping are compact gravelly silt loam till deposits ranging in depths from less than 13 to 36 cm (5 to 15 in.). These materials are calcareous in nature and seldom extend below 36 cm (15 in.). Topography is fairly steeply sloping with slopes often in excess of 40 percent but commonly in the range of 25 to 40 percent. Drainage is excessive and the limited water holding capacity of these soils in conjunction with the semiarid climatic conditions results in severe droughtiness and limited vegetative growth.

At present, these areas are under their native grassland vegetation. They hold little grazing value due to the sparseness of vegetation and difficult access throughout the majority of the unit. This soil unit consists of 10 separate mapped areas; nine located west of Highway #1 and north of Cornwall Creek, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 1.11 km^2 (274 acres).

Soil Unit 33

The soil development identified within this unit is characteristic of an Orthic Grey Luvisol as defined by the Canada Department of Agriculture[17]. These

soils are derived from moderately deep cappings of colluvial and slopewash materials overlying glacial till. The texture of the surface deposits is a loam to silt loam for the top 15 to 20 cm (6 to 8 in.) then grading into a silty clay loam to clay loam to a depth of 45 to 50 cm (18 to 20 in.). Underlying these deposits are compact silty clay loam textured till deposits which are moderately to strongly calcareous although there is no evidence of free carbonate enrichment. Although these soils contain considerable fractured rock debris throughout the soil profile, the soils are relatively free of large stones and boulders. Topography is steep throughout the unit with slopes greater than 30 percent evident over the majority of this mapped unit. The unit holds little value for agricultural use due to the restricting topography and generally dense forest cover associated with these soils. Grazing is also limited within the unit and only after recent clear cutting could these areas be of value for grazing use. This soil unit consists of a single mapped area located in the Trachyte Hills near Harry Lake. The total area defined is approximately 0.61 km^2 (151 acres).

Soil Unit 34

The soil development identified within this unit is characteristic of a Lithic *Eutric Brunisol as defined by the Canada Department of Agriculture*[17]. The soils are derived primarily from eroded till and colluvial fan deposits which are generally highly calcareous. The topsoil materials are from 10 to 15 cm (4 to 6 in.) in depth and of a gravelly stoney loam to gravelly loam texture. The soils are strongly calcareous throughout the soil profile. A zone of free carborate enrichment exists at approximately 15 cm (6 in.) below the surface. The underlying deposits are generally of variable textured colluvial rock debris with some areas also exhibiting a shallow layer of compact till deposits. The unconsolidated soil materials seldom extend beyond 0.6 m (2 ft.). Topography is somewhat variable with slopes ranging between 10 percent and 40 percent. At present, these areas have a sparse to open tree canopy with underlying native grassland conditions. They are primarily used for domestic grazing but are somewhat limited due to restricting topographic features and often sparse grassland vegetation. This soil unit consists of 15 separate

mapped areas; one located near Houth Meadows, two located in the Trachyte Hills near Harry Lake, three located in the Medicine Creek watershed, and nine located west of Highway #1 and north of Cornwall Creek. The total area defined is approximately 7.15 km^2 (1767 acres).

Soil Unit 35

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. These soils are derived from calcareous till deposits often capped with a shallow layer of fine-textured loess deposits. The topsoil capping is generally 15 to 20 cm (6 to 8 in.) in depth and of a fine sandy loam to silt loam texture. Stone content within the surface horizon is generally limited although the underlying till deposits contain moderate to heavy concentrations of stones and gravel. A layer of free carbonate enrichment exists at the interface of the topsoil and underlying compact till deposits usually occur at approximately 25 cm (10 in.). The compact till deposits are of a gravelly loam to gravelly silt loam texture and greater than 0.6 m (2 ft.) in depth. Topography varies between five and 20 percent for the majority of the unit with a gently undulating micro topography.

The area is presently sparsely treed with a significant understory of pinegrass. The area has a favourable grazing potential although conditions would tend to indicate a somewhat overgrazed situation presently existing. This soil unit consists of four separate mapped areas; two located in the Medicine Creek watershed, and two located west of Highway #1 and north of Cornwall Creek. The total area defined is approximately 2.85 km^2 (704 acres).

Soil Unit 36

The soil development identified within this unit is characteristic of a Rego Dark Grey Chernozem as defined by the Canada Department of Agriculture[17]. The soils are derived from a very shallow topsoil capping overlying dense compact till deposits. The topsoil capping can range from 5 to 20 cm (2 to 8 in.) and

is generally of a gravelly silt loam to silt loam texture. The underlying till deposits are generally very compact with little evidence of root and water penetration. The materials are of a gravelly silt loam texture and of variable stone content. Although topsoil materials are only moderately to weakly calcareous, the underlying till materials are usually strongly calcareous and occasionally free carbonate enrichment exists at the interface of the topsoil materials. Topography is moderately sloping with slopes of five to 10 percent common for much of the unit.

At present, these areas are largely under grassland conditions. Some areas having deeper topsoil cappings or occupying depressional locations support either aspen or mixed conifer tree stands. The areas hold high grazing value and are capable of good productivity under well managed conditions. This soil unit consists of nine separate mapped areas; two located in the Trachyte Hills near Harry Lake, three located in the Medicine Creek watershed, two located in the upper Cornwall Creek watershed, and one located west of Highway #1 and north of Cornwall Creek. The total area defined is approximately 4.97 km^2 (1228 acres).

Soil Unit 37

The soil developments identified within this unit are characteristic of an Orthic Grey Luvisol and a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The Orthic Grey Luvisol development occupies the depressional, seepage and deeper topsoil areas throughout the soil unit, comprising approximately 60 percent of the total area. The Degraded Eutric Brunisol development, while existing in intimate association with the Orthic Grey Luvisol, occupies the drier, steeply sloping locations with shallow topsoil cappings and occupies approximately 40 percent of the unit. These soils are both derived from compact calcareous till deposits. The areas of Orthic Grey Luvisol development have approximately 30 to 46 cm (12 to 18 in.) of topsoil development overlying the till deposits. In general, the texture of the surface 10 to 13 cm (4 to 5 in.) is a silt loam texture underlain by 20 to 30 cm (8 to 12 in.) of silt clay loam to gravelly clay loam material.

The underlying till deposits are calcareous and contained moderate to high concentrations of stones and gravels. There is no evidence of free carbonate enrichment in this unit. Those areas of Degraded Eutric Brunisol development have approximately 15 cm (6 in.) of a loam to fine sandy loam topsoil capping overlying a layer of free carbonate enrichment with a gravelly silt loam texture. The underlying till deposits are similar to those described for the Orthic Grey Luvisol development. Topography for the entire unit was moderately steeply sloping with slopes ranging from 15 to 30 percent.

The area is presently sparsely to moderately densely treed although a good grass understory generally exists throughout the unit. The area has moderate to good grazing potential and present conditions indicate fairly good range conditions. Topography could be somewhat of a limitation to grazing use but access is not considered a major limitation. It is important to note that grazing value of the unit varies considerably with density and maturity of tree cover. This soil unit consists of six separate mapped areas; one located in the Ambusten Creek watershed, one located in the Trachyte Hills near Harry Lake, two located in the Medicine Creek watershed, one located in the upper Cornwall Creek watershed, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 15.90 km^2 (3929 acres).

Soil Unit 38

The soil development identified within this unit is characteristic of an Orthic Grey Luvisol as defined by the Canada Department of Agriculture[17]. These soils were derived from calcareous glacial till deposits. The capping generally has 3 to 5 cm (1 to 2 in.) of silt loam to gravelly silt loam textured deposits overlying 20 to 30 cm (8 to 10 in.) of gravelly clay loam textured materials. The underlying deposits are compact gravelly silt loam till materials generally calcareous in nature. The subsoil materials are also moderately to strongly stoney. The topsoil materials are only weakly calcareous and there is no evidence of free carbonates within the soil profile. The topography is moderately sloping with slopes ranging between five and 20 percent. These areas are fairly densely forested but have a reasonable

grass cover in the understory, providing moderate grazing potential. In general, these areas appear well grazed and overgrazing does not appear to be a problem in these localities. This soil unit consists of 18 separate mapped areas, five located in the Trachyte Hills near Harry Lake, eight located in the Medicine Creek watershed, two located in the upper Cornwall Creek watershed, two located west of Highway #1 and north of Cornwall Creek, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 19.05 km^2 (4708 acres).

Soil Unit 39

The soil development identified within this unit was characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The topsoil materials have a silt loam to gravelly silt loam texture generally extending to depths of 30 to 36 cm (12 to 14 in.). A zone of carbonate enrichment generally exists below this depth and is from 5 to 15 cm (2 to 6 in.) in depth. The underlying materials are extremely variable in texture, apparently derived from outwash deposits. Textures range from gravelly silt loam to gravelly sands with most of the materials having moderate to high stone content trations. This soil appears well drained and the nature of the soil materials make them fairly susceptible to erosion. It should be noted that the loose gravelly texture makes them particularly suitable as possible gravel sources.

At present, the unit is largely forested and has moderate grazing potential. If present soils were disturbed, these areas would appear particularly susceptible to erosion. This soil unit consists of a single mapped area located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 0.27 km^2 (67 acres).

Soil Unit 40

The soil development identified within this unit is characteristic of an Orthic Grey Luvisol. These soils are derived from variable textured till deposits and end moraine deposits. The topsoil cappings range in depth from 46 to 61 cm (18 to 24 in.) and have a gravelly loam to gravelly silt loam

texture. The underlying till deposits are strongly calcareous with a buildup of free carbonates evident at approximately 51 to 76 cm (20 to 30 in.). In general, these areas are relatively flat with slopes less than five percent. The soils are moderately well drained and topsoil conditions appear reasonably fertile.

The area now supports a moderately dense forest canopy although the understory does have moderate grazing potential with pinegrass the main grass species. Stoniness is somewhat variable being relatively sparse at the surface and more concentrated in the underlying subsoil deposits. This soil unit consists of a single mapped area located in the upper Cornwall Creek watershed. The total area defined is approximately 0.33 km^2 (82 acres).

Soil Unit 41

The soil development identified within this unit is characteristic of an Orthic Grey Luvisol. These soils are derived from weathered till and slopewash materials. The unit occurs in areas of moderately to steeply sloping terrain with slopes ranging between 20 and 40 percent. The topsoils are generally very shallow with the underlying parent materials occurring within 46 to 51 cm (18 to 20 in.) of the surface. The texture of these materials is gravelly silt loam in the subsoil and ranging between a gravelly loam to gravelly silty clay loam in the topsoil materials. The topsoil materials are generally very weakly calcareous while underlying deposits are moderately to strongly calcareous with some evidence of free carbonates at the interface of the compact subsoil deposits.

The area is presently forested and has limited or no grazing value due to the restricting topography and sparse nature of the understory vegetation. This soil unit consists of three separate mapped areas; one located in the Trachyte Hills near Harry Lake, one located in the upper Cornwall Creek watershed, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 3.30 km^2 (816 acres).

Soil Unit 42

The soil developments identified within this unit are characteristic of Orthic Grey Luvisol and Orthic Regosol developments. These soils are located in steeply sloping areas of major drainage channels. The side slopes support the Orthic Grey Luvisol development while the ravines and lower side slopes form the Regosolic development. In general, the soils are derived from end moraine deposits and weathered heterogeneous till deposits. The Orthic Grey Luvisols have from 15 to 25 cm (6 to 10 in.) of topsoil development. The surface 10 to 15 cm (4 to 6 in.) are of a silt loam to gravelly silt loam texture with the next 5 to 10 cm (2 to 4 in.) of a gravelly clay loam to silty clay loam. The Regosolic deposits are coarse, stoney, gravelly sandy loam deposits underlain by compact gravelly sandy loam till deposits. Except for the bottom of the ravines, slopes within this region are generally greater than 40 percent.

At present, these areas support a moderately dense forest canopy and have essentially no value for grazing. This soil unit consists of six separate mapped areas; one located in the upper Hat Creek lowlands, one located in the Trachyte Hills near Harry Lake, two located in the Medicine Creek watershed, and two located in the upper Cornwall Creek watershed. The total area defined is approximately 1.82 km^2 (450 acres).

Soil Unit 43

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The soils are derived from kettled and moraine glacial till deposits. The topsoil capping varies in depth from 15 to 46 cm (6 to 18 in.). The texture of these materials is a gravelly silt loam to gravelly loam. The soils show no evidence of free carbonate enrichment and the underlying till is only moderately calcareous. The underlying glacial till is strongly compacted with textures varying from gravelly stoney loam to gravelly silt loam. The stoniness varies throughout the unit, primarily concentrated in the subsoil

deposits. The micro topography is extremely complex and slopes range from 15 to 40 percent.

The unit is only sparsely treed and has a moderate grass cover in the understory. This unit is considered to have moderately good grazing potential with topography and access the major limitations. This soil unit consists of two separate mapped areas located in the upper Cornwall Creek watershed. The total area defined is approximately 1.04 km^2 (257 acres).

Soil Unit 44

The soils of this unit are similar to Soil Unit 31 with the exception that these areas have undergone a recent burn and, thus, presently support little or no tree cover. These areas have moderately good grazing vegetation but topography limits much of its value for domestic use. This soil unit consists of two separate mapped areas; one located in the upper Cornwall Creek watershed, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 0.65 km^2 (161 acres).

Soil Unit 45

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. These soils are derived from glacial fluvial ice contact deposits. Textures range considerably throughout the unit and the soils are only moderately to weakly calcareous. The topsoil capping is 13 to 20 cm (5 to 8 in.) deep and is dominantly of a silt loam texture. Some of the underlying fluvial deposits are strongly compacted and within the rooting zone exhibit a silty clay loam texture. Areas of a coarser gravelly nature also exist but these areas were too small and irregular to identify separately. The topography is gently undulating with slopes of zero to 20 percent.

The area is presently moderately to sparsely forested with considerable grass cover in the understory. The area supports a moderate to good grazing potential. This soil unit consists of three separate mapped areas; one located

in the Medicine Creek watershed and two located in the upper Cornwall Creek watershed. The total area defined is approximately 0.73 km^2 (180 acres).

Soil Unit 46

The soils of this unit are similar to Soil Unit 45 except that this area has been subjected to a recent burn and has little or no forest canopy. The grazing value of this area is, thus, greatly improved and has good to excellent range potential. This soil unit consists of a single mapped area located in the upper Cornwall Creek watershed. The total area defined is approximately 0.70 km^2 (173 acres).

Soil Unit 47

The soil development identified in this unit is characteristic of a Gleyed Orthic Grey Luvisol as defined by the Canada Department of Agriculture[17]. This area receives considerable seepage but does not possess Gleysolic soil properties. The soils are derived from variable textured glacial till end moraine deposits. The topography is extremely complex and the area as a whole would appear susceptible to erosion if vegetation cover were removed or disturbed. The topsoil capping is shallow, being no greater than 15 cm (6 in.) in depth. The texture is of a silt loam to silty clay loam at the surface and silty clay loam from 5 to 15 cm (2 to 6 in.). The underlying till deposits are extremely variable ranging from silty clay loam to gravelly stoney loam, from glacial fluvial origin.

The unit is moderately to densely treed and has a limited grass understory. The complex, generally steep topography largely restricts domestic grazing use of these areas. This soil unit consists of six separate mapped areas; three located in the Medicine Creek watershed and three located in the upper Cornwall Creek watershed. The total area defined is approximately 3.33 km^2 (823 acres).

Soil Unit 48

The soils of this unit are similar to Soil Unit 47 except this area has been subjected to a recent burn. Some of the topsoil material has been eroded but the soil development can still be recognized. These areas have good grazing potential due to the absence of a tree canopy. This soil unit consists of a single mapped area located in the upper Cornwall Creek watershed. The total area defined is approximately 0.43 km^2 (106 acres).

Soil Unit 49

The soil developments identified within this unit are characteristic of an Orthic Dark Grey Chernozem and an Orthic Grey Luvisol as defined by the Canada Department of Agriculture[17]. The soil developments exist in intimate association and cannot be mapped individually. The Orthic Dark Grey Chernozem is located in areas having a very shallow topsoil capping over till while the Orthic Grey Luvisol development occurs in those areas of greater topsoil depth and often the depressional areas within the micro topography of the unit. Both of these soils occur on compact till deposits that show only weakly calcareous conditions, although this may increase at greater depths within the soil profile. The Orthic Dark Grey Chernozem development has 5 to 15 cm (2 to 6 in.) of topsoil capping with textures ranging from silt loam at the surface to silty clay loam to clay loam in the Bt-horizon. The underlying till deposits are gravelly silt loam in texture, often with a moderate to heavy stone content. The Orthic Grey Luvisols have 15 to 25 cm (6 to 10 in.) of topsoil, the surface 5 to 8 cm (2 to 3 in.) being a well structured silty clay loam Bt-horizon. The Orthic Grey Luvisols are forested while the Orthic Dark Grey Chernozems are under an open grassland canopy.

The unit, in general, has moderate grazing potential. The areas of Orthic Dark Grey Chernozem development being good, while the remaining area is limited. Topography varies with slopes of 15 to 20 percent common. The soil unit consists of three separate mapped areas; one located in the Trachyte Hills near Harry Lake, and two located west of Highway #1 and north of Cornwall Creek. The total area defined is approximately 0.91 km^2 (225 acres).

Soil Unit 50

The soil development identified within this unit is characteristic of a Lithic Grey Luvisol as defined by the Canada Department of Agriculture[17]. The soils are derived from a shallow capping of glacial till materials overlying bedrock. The topsoil development is shallow, ranging from 15 to 30 cm (6 to 12 in.) in depth. The surface textures are generally a silt loam to gravelly silt loam underlain by a silty clay loam to gravelly clay loam Bt-horizon. The underlying till deposits do not extend below 0.6 to 0.9 m (2 to 3 ft.) for the majority of the unit and are of a gravel silt loam texture. The till deposits are moderately calcareous but there is no evidence of free carbonates within the unit. The unit presently supports a forest canopy which, in many locations, has been recently logged. The logged areas have moderate grazing value while the unlogged areas have very limited grazing potential. The topography of the unit has slopes ranging from 20 to 30 percent. This soil unit consists of eight separate mapped areas; three located in the Trachyte Hills near Harry Lake, four located in the Medicine Creek watershed, and one located west of Highway #1 and north of Cornwall Creek. The total area defined is approximately 6.87 km^2 (1698 acres).

Soil Unit 51

The soil development identified within this unit is characteristic of a Calcareous Black Chernozem as defined by the Canada Department of Agriculture[17]. The soils are derived from compact glacial till deposits with occasional ridges of glacial outwash occurring within the same unit, but too small in extent to map independently. The Ah-horizon varies from 5 to 10 cm (2 to 4 in.) in depth and is of a loam to silt loam texture. Considerable rock and stone debris is also noted on the soil surface, and the underlying till deposits have moderate to high concentrations of stones. A layer of free carbonate enrichment exists within the unit occurring anywhere from 10 to 30 cm (4 to 12 in.) below the surface and often extending to depths of 0.6 m (2 ft.) or more. The underlying till deposits show little evidence of root or water penetration and are generally strongly calcareous.

These areas are presently in an open grassland condition and, for the majority of the area, provide a prime domestic grazing potential. The topography is gently rolling with slopes ranging from five to 20 percent or greater. This soil unit consists of 19 separate mapped areas; one located near Houth Meadows, six located in the Trachyte Hills near Harry Lake, 10 located in the Medicine Creek watershed, and two located in the upper Cornwall Creek watershed. The total area defined is approximately 4.67 km^2 (1154 acres).

Soil Unit 52

The soil developments identified with this unit are characteristic of an Orthic Grey Luvisol and a Gleyed Grey Luvisol as defined by the Canada Department of Agriculture[17]. These soils are derived from glacial till deposits with moderate to high stone and boulder content. The soils, while moderately calcareous in the underlying subsoil deposits, are generally very weakly calcareous in the surface horizon. The Gleyed Grey Luvisol development occurs in the seepage and depressional areas of the unit while the Orthic Grey Luvisol development occupies the better drained areas within the unit. The topsoils are generally silt loam to silty clay loam in texture and of a silty clay loam to clay loam in the Bt-horizons. The topsoil cappings in general are shallow, extending to no greater than 25 to 30 cm (10 to 12 in.). The Gleyed Luvisol development often has a shrub understory and high organic matter content in the Ah-horizon.

These areas are moderately densely forested, although many areas have undergone recent logging and have a moderate stand of pinegrass of value for summer grazing of livestock. This soil unit consists of three separate mapped areas; one located in the Medicine Creek watershed and two located in the upper Cornwall Creek watershed. The total area defined is approximately 4.46 km^2 (1102 acres).

Soil Unit 53

The soil development defined within this unit is characteristic of a Calcareous Black Chernozem development as defined by the Canada Department of Agriculture[17].

The soils are derived from alluvial fan deposits. They have a fairly deep topsoil or Ah capping extending often to 45 cm (18 in.). These materials are strongly calcareous throughout although evidence of free carbonate enrichment generally does not exist. The topsoils are of a silt loam to loam texture and are relatively stone free. The underlying fan materials are generally much coarser and often contain bands of gravels or coarse sands. Till ceposits or ice contact fluvial deposits often occur at greater depths. Topography is generally very gently sloping with slopes of two to five percent.

These soils are mainly found under a grassland vegetation type and are highly productive as grazing areas. This soil unit consists of 12 separate mapped areas; two located in the Trachyte Hills near Harry Lake, nine located in the Medicine Creek watershed, and one located in the upper Cornwall Creek watershed. The total area defined is approximately 0.70 km^2 (173 acres).

Soil Unit 54

The soil developments identified within this soil unit are characteristic of both Orthic Grey Luvisol and Lithic Grey Luvisol soil developments, as defined by the Canada Department of Agriculture[17]. The underlying bedrock is generally found close to the surface but there are only minor areas of rock outcropping. The Lithic and Orthic developments depend on the depth of the till capping with those areas characteristic of the Lithic development having bedrock within 0.6 m (2 ft.) of the surface. Topsoils of the two soil developments are very similar. The texture varies from a silt loam to gravelly clay loam or silty clay loam to gravelly clay loam. The clay content increases noticeably within the Bt-horizon, which occurs between 8 to 25 cm (3 to 10 in.). The till deposits are only moderately calcareous with no evidence of carbonate enrichment in the soil profile. While stone content is variable, the soil unit is generally stone free near the surface with increasing concentrations with depth. Topography of the unit is complex and slopes are generally in excess of 15 percent. The area is largely forested although much of it has been recently logged and supports a grass understory of fair value to the domestic grazing resource. This soil unit consists of five separate mapped areas;

two located in the Trachyte Hills near Harry Lake, one located in the Medicine Creek watershed, and two located in the upper Cornwall Creek watershed. The total area defined is approximately 7.09 km^2 (1752 acres).

Soil Unit 55

The soil development identified within this unit is characteristic of a Gleyed Carbonated Black Chernozem as defined by the Canada Department of Agriculture[17]. These soils are derived primarily from very poorly drained alluvial fan and stream deposits. The water table is high for a major portion of the year, although formation of a characteristic gleyed C-horizon is not evident. These soils are strongly calcareous and appear to have high salt and carbonate levels, likely the result of a leaching from the surrounding deposits. These soils have a fairly thick Ah-horizon with a loam to silt loam texture. The underlying deposits are strongly mottled and vary in texture from a gravelly sandy clay loam to gravelly silt loam. The underlying material appears to be derived from compacted glacial fluvial deposits which are also highly calcareous. Most of these areas are either in willow or wetland meadow vegetation. The topography is generally depressional to flat with slopes primarily less than five percent. These areas have moderate to good grazing potential. This soil unit consists of nine separate mapped areas, all located in the Medicine Creek watershed. The total area defined is approximately 0.59 km^2 (146 acres).

Soil Unit 56

The soil developments identified within this soil unit are characteristic of Orthic Dark Brown and Calcareous Black Chernozem developments defined by the Canada Department of Agriculture[17]. These soils are derived from compact glacial fluvial deposits. The Ah-horizons are 8 to 13 cm (3 to 5 in.) in depth and of a loam to silt loam texture. The B-horizon extends to approximately 25 cm (10 in.) where a zone of free carbonate enrichment occurs. The soils in general are strongly calcareous but do not appear to hamper the vegetative growth. The underlying parent material is generally of a gravelly silt loam texture and relatively stone free. At present, most of the unit

is under grassland conditions and provides excellent grazing potential. The topography is also favourable, with slopes ranging from less than five percent to 15 or 20 percent. This soil unit consists of four separate mapped areas, all located in the Medicine Creek watershed. The total area defined is approximately 0.95 km^2 (235 acres).

Soil Unit 57

The soil developments identified within this unit are characteristic of Orthic Dark Brown Chernozem and Degraded Eutric Brunisol. These soils are derived from glacial till capped by colluvial and slopewash deposits. The cappings are generally 15 to 20 cm (6 to 8 in.) and of silt loam to gravelly silt loam texture. They also contain considerable amounts of angular rock debris. The soils are strongly calcareous with evidence of free carbonate enrichment throughout the soil profile. The underlying till deposits are generally compact gravelly silt loam textured materials and also noted to be strongly calcareous. Slopes range between five and 20 percent. The unit is presently under a sparse to open forest canopy with the Degraded Eutric Brunisol soil development evident under the sparsely treed regions and the Orthic Dark Brown Chernozem development evident in the open grassland areas. The grazing potential of these areas is moderately good, although evidence of overgrazing in the region has tended to deplete the vegetation density of the more favourable grazing species. This soil unit consists of six separate mapped areas; one located east of Hat Creek near Medicine Creek, one located near Mouth Meadows, and four located in the Medicine Creek watershed. The total area defined is approximately 5.44 km^2 (1344 acres).

Soil Unit 58

The soil development identified within this unit is characteristic of a Lithic Dark Grey Chernozem as defined by the Canada Department of Agriculture[17]. The capping is generally very shallow, overlying compact till. These materials in turn are underlain by bedrock deposits. The Ah capping at times does not have the required depth of a Chernozemic development but is not mapped independently. The topsoil cappings are often only 3 to 5 cm (1 to 2 in.)

deep and of a silt loam to silty clay loam texture. Topography is quite variable with slopes ranging from five and 15 percent. The area is dominated by aspen stands. These areas have moderate grazing potential but density of tree canopy somewhat restricts this potential. This soil unit consists of three separate mapped areas located in the Trachyte Hills near Harry Lake. The total area defined is approximately 2.46 km^2 (608 acres).

Soil Unit 59

The soil development identified within this unit is characteristic of a Calcareous Black Chernozem as defined by the Canada Department of Agriculture[17]. The soils in general are derived from compact till deposits with some coarse gravelly glacial fluvial materials capping these deposits. These deposits have a 10 to 15 cm (4 to 6 in.) topsoil capping of loam to gravelly loam texture underlain by strongly calcareous gravelly deposits ranging from 15 to 25 cm (6 to 10 in.) in depth for portions of the unit. These are underlain by compact till deposits of a gravelly silt loam texture. In general, the materials are found to be moderately stone free with a zone of free carbonate enrichment at the interface of compact materials. The vegetation is primarily grassland and, thus, has an important grazing potential. Slopes are mostly in the range of five to 15 percent. This soil unit consists of three separate mapped areas; two located in the Trachyte Hills near Harry Lake, and one located in the lower Medicine Creek watershed. The total area defined is approximately 0.51 km^2 (126 acres).

Soil Unit 60

The soil development identified within this unit is characteristic of a Gleyed Orthic Luvisol as defined by the Canada Department of Agriculture[17]. The soils are derived from glacial till deposits and generally occupy regions of seepage or poor drainage conditions. The topsoil cappings vary from silt loam to gravelly clay loam with the lower deposits having an accumulation of clay deposits. The underlying till deposits are gravelly silt loam in texture and relatively stone free. The subsoil deposits are of a calcareous nature below 25 cm (10 in.). The area is presently sparsely to moderately

forested with deciduous growth and has moderate grazing potential. This soil unit consists of five separate mapped areas; three located in the Trachyte Hills near Harry Lake and two located in the Medicine Creek watershed. The total area defined is approximately 0.65 km^2 (161 acres).

Soil Unit 61

The soil developments identified within this unit are characteristic of an Orthic Dark Brown Chernozem and Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. These soils are derived from compact heterogeneous glacial fluvial deposits. The topsoil cappings are 10 to 15 cm (4 to 6 in.) deep and of a loam to gravelly silt loam texture. The surface deposits are moderately stoney with free carbonates evident within the lower soil profile. The underlying deposits are heterogeneous till deposits of glacial fluvial origin with pockets of coarse and fine-textured material existing throughout. These materials are also strongly calcareous and have moderate stoniness. The topography varies with slopes of 10 to 15 percent and a complex micro topography predominates. The vegetation is predominantly grassland with a good grazing potential. This soil unit consists of a single mapped area located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 0.05 km^2 (12 acres).

Soil Unit 62

The soil developments identified within this unit are characteristic of an Orthic Grey Luvisol and a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. The Orthic Grey Luvisol occupies a larger portion of the unit but is intimately associated with the Degraded Eutric Brunisol development. The ratio of the two soil developments being approximately 70 percent Orthic Grey Luvisol to 30 percent Degraded Eutric Brunisol. Both these soil types are developed from excessively stoney glacial till deposits with very shallow topsoil cappings. The Orthic Grey Luvisol development occupies the depressional areas and locations of deeper topsoil accumulations, with the Degraded Eutric Brunisol development occurring on ridges and areas where erosion has removed most of the noncompacted topsoil. Both these soil types

are strongly calcareous with carbonate buildup evident in the C-horizon, occurring at depths of 15 to 30 cm (6 to 12 in.) below the surface. Salt accumulation is also evident in some of the depressional and seepage locations but does not appear a major restriction to plant growth. Those soils, characteristic of the Orthic Grey Luvisol development, have approximately 5 cm (2 in.) of a silt loam texture Ae-horizon underlain by a 15 to 20 cm (6 to 8 in.) of a silty clay loam textured strongly structural Bt-horizon. A distinct calcareous C-horizon exists below the Bt-horizon with some mottling evident within seepage locations. The parent materials are also of a silt clay loam texture with excessive stoniness prevalent throughout the entire soil profile. Those soils, characteristic of the Degraded Eutric Brunisol development, have a very thin, generally less than 5 cm (2 in.), degraded Ae-horizon of a loam to silt loam texture. This is underlain by 10 to 15 cm (4 to 6 in.) of silt loam materials which is also moderately to strongly calcareous. A zone of 10 to 15 cm (4 to 6 in.) within the underlying C-horizon shows evidence of free carbonate enrichment with compact silty clay loam till deposits occurring below this. These soils are also excessively stoney with many boulders existing at the soil surface. Topography within the unit varies with slopes ranging from five to 15 percent and a complex micro topography also present throughout the unit. The unit holds little potential for agricultural use other than its native grazing potential. Excessive stoniness and unfavourable micro topography make the unit unfeasible to cultivate. The shallow topsoil capping and numerous depressional pockets further restrict effective irrigation of these areas and eliminates the potential for use as improved pasture or haylands. The unit is presently partially treed but of sufficient openness to provide some domestic grazing potential. This soil unit consists of a single mapped area located near Houth Meadows. The total area defined is approximately 0.96 km^2 (237 acres).

Soil Unit 63

The soil developments identified within this unit are characteristic of an Orthic Dark Brown Chernozem and a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. These soil materials are extremely calcareous in the upper soil horizons with free carbonate enrichment occurring

at the surface in some seepage and depressional locations. In general, the Orthic Dark Brown Chernozem development is evident in the open grassland regions of the unit with the Degraded Eutric Brunisol development occurring in the sparsely treed areas. These soils, while developed from compact till deposits are extremely fine-textured and particularly subject to erosion. Topsoil cappings for both types of development are relatively shallow with the underlying parent material generally less than 45 cm (18 in.) below the soil surface. Soil textures are similar throughout the unit, generally of a silt clay loam texture at the soil surface and a silty clay loam to clay loam texture in the lower soil profile and parent materials. Stoniness is somewhat variable, ranging from the occasional stone to moderate stoniness and evidence of large boulders near the soil surface. The topography is complex, with slopes ranging from five to 15 percent and a kettled micro topography prevalent throughout the unit. This unit holds very limited agricultural potential with its main significance being its native grazing potential. Topography, droughtiness and soil fertility are major restrictions to more intensive forms of agricultural development and previous overgrazing and resulting erosion has greatly reduced the natural grazing potential of this unit for domestic grazing purposes. This soil unit consists of a single mapped area located near Houth Meadows. The total area defined is approximately 0.93 km^2 (230 acres).

Soil Unit 64

The soil development identified within this unit is characteristic of a Degraded Eutric Brunisol as defined by the Canada Department of Agriculture[17]. A lithic component of this same soil development also exists within the unit but appears to occupy less than 20 percent of the total area surveyed. The soils, in general, are derived from 30 to 38 cm (10 to 15 in.) of silt loam to silt clay loam textured colluvial and slopewash materials overlying compact till or bedrock deposits. These soil materials are strongly carbonated with a buildup of free carbonates evident at 20 to 30 cm (8 to 10 in.) below the surface. Stone content is variable but generally only of moderate to low density. The underlying till deposits are strongly calcareous and show little

evidence of root and water penetration. The texture of these materials is a silt loam to silty clay loam. Topography of the unit ranges from slopes of 12 percent in the steeper sloping areas, to less than five percent in the valley bottoms. These areas are generally unsuited for agricultural development due to droughtiness, shallow soil depths and high carbonate levels. They do, however, have fairly good grazing potential if developed under good management, and are particularly useful for early spring and late fall grazing. This soil unit consists of two separate mapped areas located near Houth Meadows. The total area defined is approximately 1.10 km^2 (272 acres).

Soil Unit Rock Outcropping

This unit is predominantly rock outcropping with minor areas capped with shallow deposits of colluvial rock debris and windblown materials. The slopes are generally greater than 50 percent and have little or no vegetative cover. These areas are too rough to consider as potential grazing areas. This unit incluces a variety of soil developments as minor components but are not differentiated independently. This soil unit consists of 28 separate mapped areas; three located near Houth Meadows, two located in the Trachyte Hills near Harry Lake, one located in the Medicine Creek watershed, 21 located west of Highway #1 and north of Cornwall Creek, and one located west of Highway #1 and south of Cornwall Creek. The total area defined is approximately 7.21 km^2 (1782 acres).

APPENDIX C

ENVIRONMENT AND VEGETATION TABLES

EXPLANATION AND LEGEND
FOR
ENVIRONMENT-VEGETATION TABLES

1 Altitude indicates elevation of the plot in metres.

2 Aspect indicates compass readings from north in degrees.

3 Topography refers to the shape of the land profile on a mesoscale and is described as follows:

Topography Class	Description
A	Straight (uniform slope)
B	Concave
C	Convex
D	Flat

4 Slope Gradient is the average inclination of the sample plot.

5 Slope Position is the location of the sample plot in relation to the land surface and is described as follows:

Slope Position	Description
A	Apex
B	Face
C	Upper Slope
D	Middle Slope
E	Lower Slope

Slope Position	Description
F	Valley Floor
G	Flat Plain
H	Rolling Plain

6 Length of Upslope refers to the relative distance to the top of the slope in metres and indicates the relative amount of seepage present.

7 Exposure Type refers to the environment in terms of its micro-climate and is described as follows:

Exposure Type	Description
A	Wind
B	Insolation
C	Frost Pocket
D	Cold Air Drainage

8 Bedrock Type indicates the type of bedrock substratum present on the plot, i.e. limestone, granitic, etc.

9 Landform describes the type and the origin of the parent material and is evaluated as follows:

Landform Symbol	Description*
MP	Deep morainal deposit (loose till over compacted basal till): materials thick enough to cover irregularities of underlying bedrock; relatively flat to gently sloping; slopes less than 30 percent.

Landform Symbol	Description*
MB	Morainal blanket (loose till over compacted basal till bedrock controlled): a thick till cover, more than three feet, usually covering irregularities of underlying bedrock; slopes range from 0 to 50 percent.
MV	Morainal veneer (loose till over bedrock): till less than three feet overlying bedrock; materials too thin to mask underlying bedrock irregularities; slopes range from 0 to 50 percent.
GF	Glacio-fluvial deposits: sand, silt, gravel, and minor coarser material deposited by meltwater from the wasting glacier; relatively flat and usually deposited in thick stratified layers; material masks all features of underlying bedrock or material of another genetic category; slopes less than 10 percent.
GW	Glacio-marine deposits: sand, silt, clay and minor coarser fragments deposited under the influence of a marine environment; usually poorly drained and relatively flat in topography.
CV	Colluvial veneer: a thin, less than three feet heterogeneous mixture of materials, deposited by mass wasting processes; materials too thin to cover irregularities of underlying bedrock; slopes range from 30 to 50 percent.

10 Soil Association was extracted from existing soil association maps and may be prone to errors. It was included merely to give an idea of the type of soil to be expected and not to provide positive proof of the soil order or subgroup. The first two letters of each soil association were used on the synthesis tables.

* Fulton, R.J. 1972. Landform Classification. B.C. Dept. of Agriculture. 8. p., Appendix 6 p., (Mimeo).

11 Depth of Organic Matter is the total depth of all organic layers (LFH) in centimetres.

12 Hygrotope pertains to the moisture regime classes of soils and is approximately equal to the soil drainage classes proposed by Leskiw (1973). The symbols employed for the hygrotope classes are as follows (after Krajina, 1969):

Moisture Regime	Description
A1	Hydric
A2	Subhydric
B3	Hygric
B4	Subhygric
C5	Mesic
C6	Submesic
D7	Subxeric
D8	Xeric
D9	Very Xeric

13 Texture of Parent Material - see table below.

Texture of Parent Material (Symbol)	Description
A	Coarse
B	Medium
C	Fine

14 Salinity and Acidity were taken from the soil association maps and classed into the following categories:

Salinity of Parent Material	Description
A1	Weakly Saline
A2	Moderately Saline
A3	Strongly Saline
B	Not Saline

Acidity of Parent Material	Description
A	Acid
B	Neutral
C	Basic

15 Rock, Slash Mineral Soil and Organic Matter refer to the area in percent of each item on the sample plot.

16 Present Land Use is simply what it states.

17 Stratum Coverage indicates the total area covered by each vegetative stratum. The strata are denoted as tree layer, shrub layer, herb layer, moss layer and epiphytic layer. The shrub layer is separated into woody vegetation 6 to 30 feet tall and woody vegetation 1 to 6 feet tall. The herb layer also contains commercial tree species under 1 foot in height and creeping shrubs.

18 Mean Cover was calculated by taking the mean of the cover values.

19 Presence was calculated using the following formula:

$$\text{Presence (P)} = \frac{\text{number of occurrences of a species}}{\text{total number of releves in that particular association}} \times 100$$

20 Range of Cover is simply the difference between the lowest and highest significance encountered for a particular species.

Environment - Vegetation Tables
Alpine Tundra Biogeoclimatic Zone
Mountain Avens - Sedge Association

PLOT NUMBER	001
PHYSIOGRAPHY	
Altitude	2225
Aspect	95
Slope	10
Length of Upslope	10
Slope Position	A
Slope Moisture	Shedding
Topography	C
Exposure Type	A/B
LANDFORM	
Bedrock Type	Volcanic
Landform	CV
Soil	DYB
Depth (OM)	1
Moisture Regime	D8
Texture (PM)	A
Acidity (PM)	B
Salinity (PM)	B
Coverage (%)	
Rock	60
Decaying Wood	0
Mineral Soil	40
Humus	5
VEGETATION	
Present Land Use	Grazing
Coverage (%)	
Trees	-
High Shrub	5
Lower Shrub	-
Herb	100
Moss	-
Epiphytic	-

Environment - Vegetation Tables
Alpine Tundra Biogeoclimatic Zone
Mountain Avens - Sedge Association

PLOT NUMBER	001												
STRATA/SPECIES												Pres-ence	Mean Cover	Cover Range
Shrubs:														
Juniperus communis	< 5											100	< 5	
Pinus albicaulis	< 5											100	< 5	
Salix nivalis	< 5											100	< 5	
Grasses:														
Carex albo-nigrum	20											100	20	
Poa grayana	10											100	10	
Festuca ovina var. brevi-folia	5											100	5	
Poa alpina	5											100	5	
Herbs:														
Dryas octopetala	50											100	50	
Arenaria capillaris	10											100	10	
Antennaria umbrinella	5											100	5	
Potentilla diversifolia	5											100	5	
Saxifraga bronchialis	5											100	5	
Achillea millefolium	< 5											100	< 5	
Arnica rydbergii	< 5											100	< 5	
Eriogonum pyrolifolium	< 5											100	< 5	
Fragaria glauca	5											100	< 5	
Haplopappus lyallii	< 5											100	< 5	
Oxtropis campestris	< 5											100	< 5	
Pedicularis bracteosa	< 5											100	< 5	
Phacelia sericea	< 5											100	< 5	
Sedum lancolatum	< 5											100	< 5	

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association

PLOT NUMBER	010A	014A	019	021A	039	041	044		
PHYSIOGRAPHY									
Altitude	1920	1600	1752	1676	1690	1615	1920		
Aspect	0	Flat	150	200	250	330	Flat		
Slope	30	< 5	10	5	15	5	2		
Length of Upslope	5	0	125	150	180	335	0		
Slope Position	A	H	E	E	E	E	H		
Slope Moisture	Shedding	Receiving	Receiving	Receiving	Seepage	Receiving	Receiving		
Topography	C	D	B	B	A	A	D		
Exposure Type		D	D	D	D	D	D		
LANDFORM									
Bedrock Type	Limestone	Limestone	Basalt	Limestone	Limestone	Limestone	Limestone		
Landform	MV	MB	MV	MB	CV	CV	MB		
Soil	GL	GL	GL	GL	EB	EB	GL		
Depth (OM)	8	6	12	10	12	12	15		
Moisture Regime	D8	B4	B3	B3	B4	B3	B4		
Texture (PM)	B	B	A	B	B	B	B		
Acidity (PM)	C	C	B	C	C	C	C		
Salinity (PM)	B	B	B	B	B	B	B		
Coverage (%)									
Rock	0	< 5	5	< 5	0	0	0		
Decaying Wood	40	40	10	25	35	40	20		
Mineral Soil	0	0	0	0	0	0	0		
Humus	60	55	85	75	65	60	80		
VEGETATION									
Present Land Use	Logging	Logging	Logging	Logging	None	None	None		
Coverage (%)									
Trees	100	75	60	90	95	65	60		
High Shrub	-	40	30	25	5	25	10		
Lower Shrub	10	10	60	40	-	40	95		
Herb	10	100	100	65	70	70	15		
Moss	5	90	40	50	40	100	10		
Epiphytic	20	25	-	15	25	15	90		

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce Grouseberry Association

PLOT NUMBER	010A	014A	019	021A	039	041	044						
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Picea engelmannii	100	75	-	60	90	65	20				86	58.6	0 - 100
Pinus contorta	-	-	55	-	5	-	40				43	14.3	0 - 55
Abies lasiocarpa	-	-	5	30	-	-	-				28	5.0	0 - 30
Shrubs:													
Vaccinium scoparium	10	5	60	40	-	40	95				86	35.7	0 - 95
Shepherdia canadensis	-	10	-	-	< 5	20	5				57	5.4	0 - 20
Rosa gymnocarpa	-	5	< 5	< 5	< 5	-	-				57	1.8	0 - 5
Juniperus communis	-	-	15	-	-	-	< 5				28	2.5	0 - 15
Vaccinium membranaceum	-	-	10	5	-	-	-				28	2.1	0 - 10
Ribes lacustre	-	-	-	-	< 5	5	-				28	1.1	0 - 5
Salix sp.	-	-	-	-	-	< 5	5				28	1.1	0 - 5
Juniperus scopulorum	-	< 5	-	< 5	-	-	-				28	.7	0 - < 5
Lonicera involucrata	-	20	-	-	-	-	-				14	2.9	0 - 20
Kalmia microphylla	-	-	-	10	-	-	-				14	1.4	0 - 10
Pachystima myrsinites	-	-	-	10	-	-	-				14	1.4	0 - 10
Arctostaphylos uva-ursi	-	5	-	-	-	-	-				14	.7	0 - 5
Rhododendron albiflorum	-	-	5	-	-	-	-				14	.7	0 - 5
Spiraea betulifolia	-	-	< 5	-	-	-	-				14	.36	0 - < 5
Grasses:													
Carex sp.	-	5	-	-	< 5	< 5	-				43	1.4	0 - 5
Calamagrostis rubescens	-	-	20	< 5	-	-	-				28	3.2	0 - 20
Bromus ciliatus	-	-	< 5	-	-	-	-				14	.36	0 - < 5
Festuca occidentalis	-	< 5	-	-	-	-	-				14	.36	0 - < 5
Luzula glabrata	< 5	-	-	-	-	-	-				14	.36	0 - < 5
Trisetum spicatum	-	-	-	-	-	-	< 5				14	.36	0 - < 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association

PLOT NUMBER	010A	014A	019	021A	039	041	044						
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs:													
Fragaria glauca	< 5	30	< 5	-	5	5	< 5				86	6.8	0 - 30
Pyrola secunda	< 5	10	5	< 5	< 5	-	< 5				86	3.6	0 - 10
Thalictrum occidentale	< 5	< 5	5	< 5	< 5	< 5	-				86	2.5	0 - 5
Linnaea borealis	-	40	20	30	40	40	-				71	24.3	0 - 40
Pedicularis bracteosa	-	5	5	< 5	-	< 5	< 5				71	2.5	0 - 5
Arnica latifolia	< 5	-	-	< 5	< 5	< 5	< 5				71	2.1	0 - 5
Cornus canadensis	-	-	15	5	-	15	-				43	5.0	0 - 15
Erigeron peregrinus	-	< 5	-	< 5	-	-	< 5				43	1.1	0 -< 5
Pyrola chlorontha	-	< 5	-	-	< 5	< 5	-				43	1.1	0 -< 5
Equisetum scirpoides	-	-	-	-	20	< 5	-				28	3.2	0 - 20
Heracleum lanatum	-	-	20	< 5	-	-	-				28	3.2	0 - 20
Aster conspicuus	-	5	5	-	-	-	-				28	1.4	0 - 5
Phyllodoce empetriformis	-	-	-	< 5	-	-	5				28	1.1	0 - 5
Antennaria neglecta	-	-	< 5	-	-	-	< 5				28	.7	0 -< 5
Epilobium angustifolium	-	< 5	< 5	-	-	-	-				28	.7	0 -< 5
Osmorhiza chilensis	-	< 5	-	-	< 5	-	-				28	.7	0 -< 5
Solidago multiradiata	-	-	-	-	-	< 5	< 5				28	.7	0 -< 5
Lupinus lepidus	-	-	25	-	-	-	-				14	3.6	0 - 25
Equisetum arvense	-	-	-	20	-	-	-				14	2.8	0 - 20
Valeriana sitchensis	-	-	20	-	-	-	-				14	2.8	0 - 20
Achillea millefolium	-	-	-	-	-	-	< 5				14	.36	0 -< 5
Actaea rubra	-	< 5	-	-	-	-	-				14	.36	0 -< 5
Antennaria racemosa	-	< 5	-	-	-	-	-				14	.36	0 -< 5
Arnica cordifolia	-	-	< 5	-	-	-	-				14	.36	0 -< 5
Gentiana amarella	-	-	< 5	-	-	-	-				14	.36	0 -< 5
Heuchera cylindrica	-	-	-	-	< 5	-	-				14	.36	0 -< 5
Lathyrus ochroleucus	-	-	-	-	< 5	-	-				14	.36	0 -< 5
Parnassia fimbricata	-	-	-	< 5	-	-	-				14	.36	0 -< 5
Pedicularis racemosa	-	-	< 5	-	-	-	-				14	.36	0 -< 5
Petasites fridigus	-	-	-	< 5	-	-	-				14	.36	0 -< 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association

PLOT NUMBER	010A	014A	019	021A	039	041	044						
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs (Continued):													
Potentilla diversifolia	-	-	-	-	-	-	< 5				14	.36	0 -< 5
Senecio triangularis	-	-	-	< 5	-	-	-				14	.36	0 -< 5
Streptopus amplexifolius	-	-	< 5	-	-	-	-				14	.36	0 -< 5
Taraxacum officinale	-	-	-	-	< 5	-	-				14	.36	0 -< 5
Trollius laxus	-	-	< 5	-	-	-	-				14	.36	0 -< 5
Lichens:													
Alectoria jubata	< 5	10	n	5	10	10	60				100	16.3	5 - 60
Peltigera aphthosa	20	5	o	-	10	10	-				67	7.5	0 - 20
Letharia vulpina	< 5	< 5		-	5	-	< 5				67	2.1	0 - 5
Alectoria fremontii	-	< 5	d	-	5	-	20				50	4.6	0 - 20
Alectoria saramentosa	-	5	a	10	-	-	5				50	3.3	0 - 10
Cladonia gracilis	-	-	t	-	-	< 5	5				33	1.3	0 - 5
Cladonia gonecha	-	-	a	-	-	-	< 5				17	.42	0 -< 5
Mosses:													
Pleurozium scherberi	-	80	40	50	-	90	-				67	43.3	0 - 90
Dicranium scoparium	-	-	-	-	< 5	-	< 5				28	.7	0 -< 5
Drepanocladus uncinatus	-	-	-	-	30	-	-				17	5.0	0 - 30
Polytrichum juniperum	-	-	-	-	-	-	10				17	1.7	0 - 10
Brachythecium spp.	-	-	-	-	-	-	5				14	.7	0 - 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - Pinegrass Association

PLOT NUMBER	012	014	018	037	043	045	051		
PHYSIOGRAPHY									
Altitude	1740	1600	1420	1585	1400	1615	1640		
Aspect	210	210	225	90	100	300	220		
Slope	15	5	5	5	2	10	10		
Length of Upslope	215	0	600	30	600	600	125		
Slope Position	E	H	E	H	E	C	C		
Slope Moisture	Normal	Seepage	Receiving	Seepage	Seepage	Shedding	Seepage		
Topography	B	B	B	D	A	C	B		
Exposure Type	D	B	D	C	Sheltered	A	B		
LANDFORM									
Bedrock Type	Granite	Limestone	Limestone	Limestone	Basalt	Basalt	Basalt		
Landform	MB	MP	GF	MP	MB	CV	MV		
Soil	GL	GL	EB	GL	GL	EB	GL		
Depth (OM)	2.5	5.0	10.0	7.0	5.0	5.0	5.0		
Moisture Regime	C6	C5	B4	B4	C5	D7	C5		
Texture (PM)	A	B	A	B	B	B	B		
Acidity (PM)	A	C	C	C	B	B	C		
Salinity (PM)	B	B	A1	B	B	B	B		
Coverage (%)									
Rock	60	20	5	0	0	5	0		
Decaying Wood	10	15	20	15	5	10	40		
Mineral Soil	0	0	5	20	10	10	< 5		
Humus	30	65	70	65	85	75	60		
VEGETATION									
Present Land Use	Grazing	Grazing	Logging	Grazing	Grazing	Logging	Grazing		
Coverage (%)									
Trees	90	85	60	70	70	40	80		
High Shrub	10	95	25	25	30	25	45		
Lower Shrub	80	25	20	15	20	20	60		
Herb	100	95	100	65	95	90	100		
Moss	5	5	90	20	10	30	< 5		
Epiphytic	90	60	20	75	20	5	0		

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - Pinegrass Association

PLOT NUMBER	012	014	018	037	043	045	051						
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Trees:													
Pinus contorta	85	80	55	50	70	40	70				100	64.3	40 - 85
Picea engelmannii	5	5	5	20	-	-	-				57	5.0	0 - 20
Pseudotsuga menziesii	-	-	-	-	-	-	20				14	2.8	0 - 20
Shrubs:													
Vaccinium scoparium	80	20	10	10	15	20	40				100	27.8	10 - 80
Juniperus communis	10	20	10	5	-	15	40				86	14.3	0 - 40
Shepherdia canadensis	-	70	5	10	< 5	5	-				71	13.2	0 - 70
Arctostaphylos uva-ursi	-	5	-	< 5	5	< 5	20				71	5.0	0 - 20
Alnus incana	-	-	-	-	15	5	< 5				43	3.2	0 - 15
Rosa gymnocarpa	-	5	-	5	< 5	-	-				43	1.8	0 - 5
Vaccinium caespitosum	-	-	10	< 5	-	-	-				28	1.8	0 - 10
Empetrum nigerum	-	-	5	-	-	< 5	-				28	1.1	0 - 5
Salix sp.	-	-	-	-	5	-	< 5				28	1.1	0 - 5
Spiraea betulifolia	-	-	-	-	5	< 5	-				28	1.1	0 - 5
Acer glabrum	-	-	5	-	-	-	-				14	.7	0 - 5
Amelanchier alnifolia	-	-	-	-	-	< 5	-				14	.36	0 - < 5
Lonicera involucrata	-	-	-	-	< 5	-	-				14	.36	0 - < 5
Physocarpus capitatus	-	-	-	-	< 5	-	-				14	.36	0 - < 5
Ribes lacustre	-	-	-	-	-	-	< 5				14	.36	0 - < 5
Grasses:													
Calamagrostis rubescens	25	75	85	10	85	60	95				100	62.1	10 - 95
Carex sp.	5	-	-	-	5	-	-				28	1.4	0 - 5
Trisetum spicatum	< 5	-	-	< 5	-	-	-				28	.7	0 - < 5
Festuca occidentalis	-	-	-	5	-	-	-				14	.7	0 - < 5
Phleum alpinum	-	-	-	-	-	-	< 5				14	.36	0 - < 5
Poa gracillima	-	-	-	-	-	< 5	-				14	.36	0 - < 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - Pinegrass Association

PLOT NUMBER	012	014	018	037	043	045	051						
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs:													
Pyrola secunda	10	< 5	< 5	< 5	< 5	-	< 5				86	3.2	0 - 10
Fragaria glauca	30	-	5	5	-	5	< 5				71	6.8	0 - 30
Linnaea borealis	-	10	15	5	5	5	-				71	5.7	0 - 15
Lupinus lepidus	15	-	-	40	-	10	20				57	12.1	0 - 40
Arnica latifolia	15	5	-	< 5	-	-	-				43	3.2	0 - 15
Aster conspicuus	-	-	5	-	< 5	-	5				43	1.8	0 - 5
Achillea millefolium	5	-	-	< 5	-	< 5	-				43	1.4	0 - 5
Pyrola chlorontha	-	< 5	< 5	-	< 5	-	-				43	1.1	0 - < 5
Cornus canadensis	-	-	25	-	< 5	-	-				28	3.9	0 - 25
Pedicularis bracteosa	5	-	-	-	-	-	5				28	1.4	0 - 5
Arnica cordifolia	-	-	10	-	-	-	-				14	1.4	0 - 10
Lycopodium camplanatum	-	-	10	-	-	-	-				14	1.4	0 - 10
Antennaria neglecta	-	-	-	-	-	-	< 5				14	.36	0 - < 5
Antennaria roseus	< 5	-	-	-	-	-	-				14	.36	0 - < 5
Chimaphila menziesii	-	-	-	-	< 5	-	-				14	.36	0 - < 5
Equisetum arvense	-	-	< 5	-	-	-	-				14	.36	0 - < 5
Erigeron compositus	-	-	-	-	-	< 5	-				14	.36	0 - < 5
Galium boreale	-	-	-	< 5	-	-	-				14	.36	0 - < 5
Petasites frigidus var. nivalis	-	-	-	< 5	-	-	-				14	.36	0 - < 5
Potentilla diversifolia	< 5	-	-	-	-	-	-				14	.36	0 - < 5
Taraxacum officinale	-	-	-	< 5	-	-	-				14	.36	0 - < 5
Thalictrum occidentale	-	-	-	< 5	-	-	-				14	.36	0 - < 5
Vicia americana	-	-	-	< 5	-	-	-				14	.36	0 - < 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - Pinegrass Association

PLOT NUMBER	012	014	018	037	043	045	051						
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Lichens:													
Alectoria jubata	50	35	10	40	5	-					83	23.3	0 - 50
Peltigera aphthosa	-	5	5	5	5	5	n				83	5.0	0 - 5
Letharia vulpina	15	10	-	20	5	-	o				67	8.3	0 - 20
Alectoria saramentosa	15	10	< 5	5	-	-					67	5.4	0 - 15
Alectoria fremontii	10	5	< 5	10	-	-	d				67	4.6	0 - 10
Peltigera canina	-	-	-	5	-	-	a				17	.83	0 - 5
Cladonia cornuta	-	-	-	-	< 5	-	t				17	.42	0 - <5
Cladina rangiferina	-	-	< 5	-	-	-	a				17	.42	0 - <5
Stereocaulon alpinum	-	-	-	-	< 5	-					17	.42	0 - <5
Mosses:													
Pleurozium schreberi	-	5	70	-	5	30	-				57	15.7	0 - 70
Drepanocladus uncinatus	-	-	-	20	-	-	-				14	2.8	0 - 20
Pohlia nutans	-	-	-	-	< 5	-	-				14	.4	0 - <5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - White Rhododendron Association

PLOT NUMBER	003	020
PHYSIOGRAPHY		
Altitude	1675	1765
Aspect	180	Flat
Slope	20	< 5
Length of Upslope	5	0
Slope Position	A	G
Slope Moisture	Shedding	Normal
Topography	C	D
Exposure Type	A/B	A
LANDFORM		
Bedrock Type	Limestone	Basalt
Landform	MV	MV
Soil	GL	GL
Depth (OM)	1	6
Moisture Regime	D9	C5
Texture (PM)	B	B
Acidity (PM)	C	B
Salinity (PM)	B	B
Coverage (%)		
Rock	20	< 5
Decaying Wood	< 5	20
Mineral Soil	10	0
Humus	65	70
VEGETATION		
Present Land Use	Grazing	Logging
Coverage (%)		
Trees	100	45
High Shrub	60	95
Lower Shrub	40	70
Herb	85	35
Moss	10	10
Epiphytic	25	25

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - White Rhododendron Association

PLOT NUMBER	003	020											
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Pinus contorta	60	45									100	52.5	45-60
Picea engelmannii	20	-									50	10.0	0 -20
Pseudotsuga menziesii	20	-									50	10.0	0 -20
Shrubs:													
Vaccinium scoparium	30	70									100	50.0	30-70
Rhododendron albiflorum	15	45									100	30.0	15-45
Shepherdia canadensis	25	35									100	30.0	25-35
Juniperus communis	15	5									100	10.0	5 -15
Arctostaphylos uva-ursi	10	-									50	5.0	0 -10
Vaccinium membranaceum	-	10									50	5.0	0 -10
Rosa gymnocarpa	5	-									50	2.5	0 - 5
Grasses:													
Calamagrostis rubescens	40	5									100	22.5	5 -40
Trisetum spicatum	< 5	5									100	3.8	<5- 5
Poa alpina	< 5	-									50	1.3	0 -<5
Poa scabrella	< 5	-									50	1.3	0 -<5
Herbs:													
Linnaea borealis	10	15									100	12.5	10-15
Thalictrum occidentale	10	-									50	5.0	0 -10
Arnica cordifolia	< 5	5									100	3.8	<5- 5
Pedicularis bracteosa	< 5	< 5									100	2.5	<5
Pedicularis racemosa	< 5	< 5									100	2.5	<5
Fragaria glauca	10	-									50	5.0	0 -10

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry - White Rhododendron Association

PLOT NUMBER	003	020											
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Antennaria neglecta	-	< 5									50	1.3	0 -<5
Castilleja miniata	< 5	-									50	1.3	0 -<5
Epilobium angustifolium	-	< 5									50	1.3	0 -<5
Erigeron peregrinus	-	< 5									50	1.3	0 -<5
Potentilla diversifolia	< 5	-									50	1.3	0 -<5
Pyrola secunda	< 5	-									50	1.3	0 -<5
Saxifraga bronchialis	< 5	-									50	1.3	0 -<5
Sedum lancolatum	< 5	-									50	1.3	0 -<5
Silene parryi	< 5	-									50	1.3	0 -<5
Solidago multiradiata	< 5	-									50	1.3	0 -<5
Solidago spathulata	< 5	-									50	1.3	0 -<5
Lichens:													
Letharia vulpina	15	25									100	20.0	15-25
Alectoria jubata	5	-									50	2.5	0 - 5
Alectoria fremontii	5	-									50	2.5	0 - 5
Alectoria saramentosa	< 5	-									50	1.3	0 -<5
Mosses:													
Ditrichum flexicaule	< 5	-									50	1.3	0 -<5
Tortula ruralis	< 5	-									50	1.3	0 -<5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Willow - Red Heather Parkland Association

PLOT NUMBER	002	006							
PHYSIOGRAPHY									
Altitude	2200	2072							
Aspect	90	100							
Slope	10	5							
Length of Upslope	300	152							
Slope Position	C	C							
Slope Moisture	Normal	Seepage							
Topography	A	B							
Exposure Type	A/B	A/B							
LANDFORM									
Bedrock Type	Volcanic	Limestone							
Landform	CV	CV							
Soil	DYB	DYB							
Depth (OM)	1	1							
Moisture Regime	C6	B4							
Texture (PM)	A	B							
Acidity (PM)	B	B							
Salinity (PM)	B	B							
Coverage (%)									
Rock	10	35							
Decaying Wood	10	5							
Mineral Soil	10	20							
Humus	70	40							
VEGETATION									
Present Land Use	Grazing	Grazing							
Coverage (%)									
Trees	10	20							
High Shrub	70	85							
Lower Shrub	30	75							
Herb	95	60							
Moss	5	5							
Epiphytic	< 5	< 5							

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Willow - Red Heather Parkland Association

PLOT NUMBER	002	006											
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Trees:													
Picea engelmannii	5	10									100	7.5	5 - 10
Pinus albicaulis	5	5									100	5.0	5
Abies lasiocarpa	< 5	5									100	3.8	<5 - 5
Shrubs:													
Salix nivalis	40	75									100	57.5	40 - 75
Salix cascadensis	30	75									100	52.5	30 - 75
Arctostaphylos uva-ursi	20	40									100	30.0	20 - 40
Vaccinium scoparium	10	35									100	22.5	10 - 35
Juniperus communis	-	10									50	5.0	0 - 10
Phyllodoce empetriformis	-	10									50	5.0	0 - 10
Grasses:													
Carex albo-nigrum	20	< 5									100	11.3	<5 - 20
Poa grayana	10	< 5									100	6.3	<5 - 10
Festuca ovina var. brevifolia	5	< 5									100	3.6	<5 - 5
Poa alpina	5	< 5									100	3.6	<5 - 5
Festuca ovina var. rydbergii	5	-									50	2.5	0 - 5
Poa scabrella	< 5	-									50	1.3	0 - <5
Trisetum spicatum	< 5	-									50	1.3	0 - <5
Herbs:													
Lupinus lepidus	30	< 5									100	16.3	<5 - 30
Fragaria glauca	< 5	15									100	8.8	<5 - 15
Thalictrum occidentale	< 5	10									100	6.3	<5 - 10
Anemone multifida	< 5	< 5									100	2.5	<5
Antennaria roseus	< 5	< 5									100	2.5	<5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Willow - Red Heather Parkland Association

PLOT NUMBER	002	006											
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Arnica latifolia	< 5	< 5									100	2.5	< 5
Castilleja miniata	< 5	< 5									100	2.5	< 5
Penstemon procerus	< 5	< 5									100	2.5	< 5
Potentilla diversifolia	< 5	< 5									100	2.5	< 5
Dryas octopelata	-	10									50	5.0	0-10
Sedum lancolatum	10	-									50	5.0	0-10
Eriogonum heracleoides	5	-									50	2.5	0- 5
Pedicularis bracteosa	< 5	5									100	3.75	0- 5
Achillea millefolium	< 5	-									50	1.3	0-<5
Arenaria capillaris	< 5	-									50	1.3	0-<5
Epilobium glandulosum	< 5	-									50	1.3	0-<5
Geum triflorum	-	< 5									50	1.3	0-<5
Saxifraga bronchialis	-	< 5									50	1.3	0-<5
Stellaria calycantha	< 5	-									50	1.3	0-<5
Trisetum spicatum	-	< 5									50	1.3	0-<5
Lichens:													
Alectoria jubata	< 5	< 5									100	2.5	< 5
Letharia vulpina	-	< 5									50	1.3	0-<5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association - Lupines Association

PLOT NUMBER	007	009	009A	015	033				
PHYSIOGRAPHY									
Altitude	2040	2100	2040	1950	2010				
Aspect	5	300	340	30	0				
Slope	20	20	10	32	15				
Length of Upslope	30	30	60	152	30				
Slope Position	C	C	C	C	C				
Slope Moisture	Normal	Seepage	Normal	Normal	Shedding				
Topography	A	A	A	A	A				
Exposure Type	D	D	D	D	A				
LANDFORM									
Bedrock Type	Limestone	Volcanic	Volcanic	Limestone	Limestone				
Landform	CV	CV	CV	CV	CV				
Soil	DYB	DYB	DYB	DYB	DYB				
Depth (OM)	5	7	5	7	10				
Moisture Regime	C5	B4	C5	C5	C6				
Texture (PM)	B	B	B	B	B				
Acidity (PM)	C	B	B	C	C				
Salinity (PM)	B	B	B	B	A1				
Coverage (%)									
Rock	< 5	0	< 5	0	< 5				
Decaying Wood	20	20	10	10	20				
Mineral Soil	< 5	< 5	20	0	0				
Humus	75	80	70	90	75				
VEGETATION									
Present Land Use	None	Forestry	None	Logging	Grazing/ Forestry				
Coverage (%)									
Trees	100	95	100	60	45				
High Shrub	10	10	-	5	-				
Lower Shrub	60	40	80	50	80				
Herb	95	80	65	55	65				
Moss	30	25	30	40	20				
Epiphytic	60	30	10	20	40				

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association - Lupines Association

PLOT NUMBER	007	009	009A	015	033								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Pinus engelmannii	80	90	5	60	45						100	56.0	5 - 90
Pinus contorta	-	5	95	-	-						40	20.0	0 - 95
Abies lasiocarpa	20	-	-	-	-						20	4.0	0 - 20
Shrubs:													
Vaccinium scoparium	60	40	80	50	80						100	62.0	40 - 80
Phyllodoce empetriformis	5	15	10	20	-						80	11.0	0 - 20
Cassiope mertensiana	5	-	10	-	-						40	3.0	0 - 10
Salix sp.	-	10	-	-	-						20	2.0	0 - 10
Phyllodoce glandiflora	5	-	-	-	-						20	1.0	0 - 5
Salix cascadensis	5	-	-	-	-						20	1.0	0 - 5
Salix nivalis	5	-	-	-	-						20	1.0	0 - 5
Vaccinium membranaceum	-	-	-	5	-						20	1.0	0 - 5
Rhododendron albiflorum	-	< 5	-	-	-						20	.50	0 - < 5
Grasses:													
Trisetum spicatum	< 5	< 5	< 5	-	5						80	2.5	0 - 5
Poa grayana	5	10	-	-	5						60	4.0	0 - 10
Luzula hitchcockii	< 5	5	-	-	-						40	1.5	0 - 5
Festuca ovina var. rydbergii	-	-	-	-	5						20	1.0	0 - 5
Carex sp.	-	-	-	< 5	-						20	.50	0 - < 5
Phleum alpinum	-	< 5	-	-	-						20	.50	0 - < 5
Poa cusickii	-	< 5	-	-	-						20	.50	0 - < 5
Poa sandbergii	< 5	-	-	-	-						20	.50	0 - < 5
Herbs:													
Lupinus lepidus	30	15	30	10	10						100	19.0	10 - 30
Pedicularis bracteosa	10	10	10	5	< 5						100	7.5	<5 - 10

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association - Lupines Association

PLOT NUMBER	007	009	009A	015	033								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Fragaria glauca	20	10	-	10	15						80	11.0	0 - 20
Trollius laxus	5	5	5	-	< 5						80	3.5	0 - 5
Arnica latifolia	5	< 5	< 5	-	5						80	3.0	0 - 5
Pyrola secunda	-	5	< 5	5	< 5						80	3.0	0 - 5
Stellaria calycantha	< 5	-	-	< 5	< 5						60	1.5	0 - < 5
Thalictrum occidentale	10	-	-	-	< 5						40	2.5	0 - 10
Achillea millefolium	-	< 5	5	-	-						40	1.5	0 - 5
Castilleja miniata	< 5	< 5	-	-	-						40	1.0	0 - < 5
Erigeron peregrinus	< 5	< 5	-	-	-						40	1.0	0 - < 5
Potentilla diversifolia	< 5	< 5	-	-	-						40	1.0	0 - < 5
Solidago multiradiata	-	< 5	< 5	-	-						40	1.0	0 - < 5
Gentiana amarella	5	-	-	-	-						20	1.0	0 - 5
Linnaea borealis	-	-	-	-	5						20	1.0	0 - 5
Cerastium arvense	< 5	-	-	-	-						20	.50	0 - < 5
Epilobium angustifolium	< 5	-	-	-	-						20	.50	0 - < 5
Equisetum arvense	-	< 5	-	-	-						20	.50	0 - < 5
Erigeron sp.	< 5	-	-	-	-						20	.50	0 - < 5
Erigeron speciosus	-	-	-	< 5	-						20	.50	0 - < 5
Parnassia fimbricata	< 5	-	-	-	-						20	.50	0 - < 5
Polygonum viviparum	< 5	-	-	-	-						20	.50	0 - < 5
Pyrola uniflora	< 5	-	-	-	-						20	.50	0 - < 5
Sedum lancolatum	-	-	-	-	< 5						20	.50	0 - < 5
Senecio triangularis	-	< 5	-	-	-						20	.50	0 - < 5
Silene parryi	-	< 5	-	-	-						20	.50	0 - < 5
Valeriana sitchensis	-	< 5	-	-	-						20	.50	0 - < 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Engelmann Spruce - Grouseberry Association - Lupines Association

PLOT NUMBER	007	009	009A	015	033								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Lichens:													
Alectoria jubata	30	10	5	10	25						100	16.0	5 - 30
Alectoria saramentosa	20	10	< 5	< 5	15						100	10.0	<5 - 20
Peltigera aphthosa	5	-	-	5	< 5						60	3.0	0 - 5
Alectoria fremontii	5	< 5	-	-	5						60	2.0	0 - 5
Cladonia gracilis	-	< 5	-	< 5	-						40	1.0	0 - <5
Letharia vulpina	-	-	-	-	5						20	1.0	0 - 5
Cladonia gonecha	-	-	-	-	< 5						20	.5	0 - <5
Mosses:													
Drepanocladus uncinatus	30	-	-	-	15						40	9.0	0 - 30
Dicranum fusescens	-	5	-	5	-						40	2.0	0 - 5
Brachythecium sp.	-	-	-	5	< 5						40	1.5	0 - 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Pinegrass Association

PLOT NUMBER	011	027	028	034	038	046	048	052	064
PHYSIOGRAPHY									
Altitude	1375	885	855	1585	1585	1265	1265	1400	1325
Aspect	45	270	0	270	210	Flat	90	280	160
Slope	18	5	15	10	15	2	15	10	20
Length of Upslope	15	180	450	450	150	600	150	450	150
Slope Position	C	D	E	D	D	E	D	D	D
Slope Moisture	Normal	Normal	Seepage	Normal	Normal	Seepage	Normal	Normal	Normal
Topography	A	A	B	A	A	D	A	A	A
Exposure Type	Sheltered	Sheltered	D	Sheltered	B	Sheltered	B	A/B	Sheltered
LANDFORM									
Bedrock Type	Volcanic	Sedimentary		Limestone	Limestone	Basalt	Basalt	Basalt	Sediment.
Landform	MB	MP	GF/MB	CV	CV	MP	CV	CV	MV
Soil	GL	EB	EB	GL	EB	GL	EB	EB	GL
Depth (OM)	1	1	2.5	6	2.5	4	2.5	1	5
Moisture Regime	C6	C5	B4	C5	C5	C5	C5	C5	C5
Texture (PM)	B	B	B	B	B	B	B	B	B
Acidity (PM)	C	C	C	C	C	C	C	C	C
Salinity (PM)	A1	A2	A2	B	B	A1	A1	B	B
Coverage (%)									
Rock	< 5	5	0	0	0	0	10	10	10
Decaying Wood	10	0	5	10	10	15	0	20	10
Mineral Soil	20	50	20	20	10	25	30	50	20
Humus	70	45	45	70	80	60	60	20	60
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing/ Forestry	Grazing	Grazing	Grazing	Grazing	Logging
Coverage (%)									
Trees	50	30	45	30	75	80	20	15	80
High Shrub	5	5	15	35	5	10	15	55	25
Lower Shrub	10	10	5	< 5	-	< 5	10	70	35
Herb	100	75	95	50	100	95	100	85	75
Moss	10	-	20	10	-	5	< 5	10	10
Epiphytic	50	55	5	35	60	65	5	70	10

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Pinegrass Association

PLOT NUMBER	011	027	028	034	038	046	048	052	064				
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Trees:													
Pseudotsuga menziesii	50	20	45	30	70	80	20	5	70		100	37.8	5 - 80
Pinus contorta	-	-	-	20	5	-	-	10	10		44	5.0	0 - 20
Picea engelmannii	-	-	-	40	-	-	-	-	-		11	4.4	0 - 40
Pinus ponderosa	-	10	-	-	-	-	-	-	-		11	1.1	0 - 10
Shrubs:													
Rosa gymnocarpa	5	5	5	10	< 5	5	5	5	5		100	5.3	<5- 10
Arctostaphylos uva-ursi	-	10	5	< 5	-	< 5	10	70	35		78	15.0	0 - 70
Amelanchier alnifolia	-	< 5	5	-	-	-	5	5	5		56	2.5	0 - 5
Shepherdia canadensis	-	-	-	15	5	-	-	20	5		44	5.0	0 - 20
Salix sp.	-	-	-	5	-	-	5	10	< 5		44	2.5	0 - 10
Juniperus communis	-	-	5	< 5	< 5	5	-	-	-		44	1.7	0 - 5
Vaccinium caespitosum	-	-	-	-	-	-	-	< 5	5		22	.8	0 - 5
Spiraea betulifolia	-	-	-	-	-	-	-	10	-		11	1.1	0 - 10
Vaccinum membranaceum	-	-	-	-	-	-	-	5	-		11	.6	0 - 5
Chrysothamnus nauseosus	-	< 5	-	-	-	-	-	-	-		11	.3	0 -<5
Juniperus scopulorum	-	-	< 5	-	-	-	-	-	-		11	.3	0 -<5
Ribes lacustre	-	-	-	< 5	-	-	-	-	-		11	.3	0 -<5
Grasses:													
Calamagrostis rubescens	90	40	80	40	95	85	90	70	55		100	71.7	40- 95
Carex sp.	-	< 5	-	< 5	< 5	< 5	< 5	< 5	< 5		78	1.9	0 -< 5
Poa pratensis	5	< 5	-	-	-	-	< 5	-	-		33	1.1	0 - 5
Agropyron spicatum	-	10	10	-	-	-	-	-	-		22	2.2	0 - 10
Poa gracillima	-	-	-	-	-	-	-	5	< 5		22	.8	0 - 5
Poa interior	< 5	-	-	-	5	-	-	-	-		22	.8	0 - 5
Festuca ovina var. rydbergii	< 5	< 5	-	-	-	-	-	-	-		22	.6	0 -<5
Festuca scabrella	-	< 5	< 5	-	-	-	-	-	-		22	.6	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Pinegrass Association

PLOT NUMBER	011	027	028	034	038	046	048	052	064				
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Grasses (Continued):													
Stipa occidentalis	-	-	< 5	-	-	-	< 5	-	-		22	.6	0 - < 5
Stipa richardsonii	-	< 5	< 5	-	-	-	-	-	-		22	.6	0 - < 5
Luzula parvifolia	-	-	-	-	-	-	-	-	10		11	1.1	0 - 10
Luzula hitchcockii	< 5	-	-	-	-	-	-	-	-		11	.3	0 - < 5
Koeleria cristata	-	-	-	-	-	-	< 5	-	-		11	.3	0 - < 5
Stipa comata	-	-	-	-	-	-	< 5	-	-		11	.3	0 - < 5
Trisetum spicatum	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Herbs:													
Allium cernuum	10	< 5	< 5	< 5	< 5	5	-	-	< 5		78	4.2	0 - 10
Fragaria glauca	10	< 5	-	< 5	< 5	< 5	5	-	< 5		78	3.1	0 - 10
Achillea millefolium	10	< 5	< 5	-	< 5	-	< 5	< 5	< 5		78	2.8	0 - 10
Astragalus miser	< 5	< 5	< 5	-	< 5	< 5	-	-	5		67	1.9	0 - 5
Antennaria roseus	-	< 5	< 5	-	< 5	< 5	< 5	-	< 5		67	1.7	0 - < 5
Taraxacum officinale	< 5	-	< 5	< 5	< 5	< 5	< 5	-	-		67	1.7	0 - < 5
Aster conspicuus	-	< 5	-	5	-	-	-	< 5	< 5		44	1.4	0 - 5
Geum triflorum	5	-	5	-	-	< 5	-	-	-		33	1.4	0 - 5
Antennaria anaphaloides	< 5	-	-	-	5	< 5	-	-	-		33	.8	0 - < 5
Arnica cordifolia	-	-	-	-	< 5	-	< 5	-	< 5		33	.8	0 - 5
Heuchera cylindrica	-	-	< 5	-	-	-	< 5	-	< 5		33	.8	0 - < 5
Antennaria racemosa	-	-	-	-	-	< 5	-	< 5	-		22	.6	0 - < 5
Oxytropis campestris	-	< 5	< 5	-	-	-	-	-	-		22	.6	0 - < 5
Penstemon fruticosus	-	-	-	-	-	-	< 5	-	< 5		22	.6	0 - < 5
Linnaea borealis	-	-	-	-	-	-	-	10	-		11	1.1	0 - 10
Balsamorhiza sagittata	-	5	-	-	-	-	-	-	-		11	.6	0 - 5
Lithospermum ruderale	-	-	5	-	-	-	-	-	-		11	.6	0 - 5
Anemone multifida	-	-	-	-	< 5	-	-	-	-		11	.6	0 - < 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Pinegrass Association

PLOT NUMBER	011	027	028	034	038	046	048	052	064				
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs (Continued):													
Antennaria neglecta	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Erigeron compositus	-	-	-	-	-	-	< 5	-	-		11	.3	0 - < 5
Erigeron flagellaris	-	-	-	-	-	-	< 5	-	-		11	.3	0 - < 5
Erigeron philadelphicus	-	-	< 5	-	-	-	-	-	-		11	.3	0 - < 5
Goodyera oblongifolia	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Hieracium albiflorum	-	-	-	-	-	-	-	-	< 5		11	.3	0 - < 5
Osmorhiza chilensis	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Pedicularis bracteosa	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Polomonium pulcherrimum	-	-	-	-	-	-	-	< 5	-		11	.3	0 - < 5
Potentilla diversifolia	-	-	-	-	-	-	-	-	< 5		11	.3	0 - < 5
Pyrola secunda	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Sedum lancolatum	-	-	-	-	-	-	-	-	< 5		11	.3	0 - < 5
Silene douglasii	< 5	-	-	-	-	-	-	-	-		11	.3	0 - < 5
Thalictrum occidentale	-	-	-	< 5	-	-	-	-	-		11	.3	0 - < 5
Lichens:													
Letharia vulpina	50	50	5	30	60	60	< 5	65	< 5		100	36.1	< 5 - 65
Alectoria jubata	< 5	< 5	-	< 5	-	< 5	-	-	10		44	3.6	0 - < 5
Peltigera canina	< 5	< 5	-	-	-	5	-	-	5		44	1.67	0 - 5
Alectoria saramentosa	-	-	-	< 5	-	< 5	-	-	5		33	1.1	0 - 5
Cladonia gracilis	-	-	-	-	-	-	-	5	-		11	.56	0 - 5
Peltigera aphthosa	-	-	-	5	-	-	-	-	-		11	.56	0 - 5
Cladonia pyxidata	-	-	-	-	-	-	-	< 5	-		11	.28	0 - < 5
Cladonia phyllophora	-	-	< 5	-	-	-	-	-	-		11	.28	0 - < 5
Moss:													
Leptobryum pyriforme	-	-	-	-	-	-	-	5	-		11	.56	0 - 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass Association

PLOT NUMBER	031	068	069						
PHYSIOGRAPHY									
Altitude	930	855	855						
Aspect	240	170	240						
Slope	5	70	30						
Length of Upslope	915	300	60						
Slope Position	D	E	E						
Slope Moisture	Seepage	Shedding	Receiving						
Topography	A	A	B						
Exposure Type	Sheltered	B	B						
LANDFORM									
Bedrock Type	Sediment.	Limestone	Limestone						
Landform	MB	CV	CV						
Soil	EB	DG	DG						
Depth (OM)	1	1	1						
Moisture Regime	C6	C6	C5						
Texture (PM)	B	A	B						
Acidity (PM)	C	C	C						
Salinity (PM)	A2	B	B						
Coverage (%)									
Rock	0	20	10						
Decaying Wood	< 5	< 5	< 5						
Mineral Soil	45	75	75						
Humus	50	< 5	< 5						
VEGETATION									
Present Land Use	Grazing	None	Grazing						
Coverage (%)									
Trees	20	20	20						
High Shrub	5	5	15						
Lower Shrub	-	< 5	< 5						
Herb	95	100	100						
Moss	-	-	-						
Epiphytic	5	-	-						

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass Association

PLOT NUMBER	031	068	069									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Pinus ponderosa	20	-	20								66	13.3	0 - 20
Pseudotsuga menziesii	-	20	-								33	6.6	0 - 20
Shrubs:													
Juniperus scopulorum	< 5	< 5	5								100	3.3	<5- 5
Chrysothamnus nauseosus	< 5	-	10								66	4.2	0 - 10
Artemisia frigida	-	5	< 5								66	2.5	0 - 5
Amelanchier alnifolia	< 5	< 5	-								66	1.6	0 - < 5
Arctostaphylos uva-ursi	-	-	< 5								33	.8	0 - < 5
Artemisia campestris	-	-	< 5								33	.8	0 - < 5
Artemisia tridentata	< 5	-	-								33	.8	0 - < 5
Rosa woodsii	< 5	-	-								33	.8	0 - < 5
Spiraea betulifolia	-	< 5	-								33	.8	0 - < 5
Grasses:													
Agropyron spicatum	5	80	85								100	56.6	5 - 85
Koeleria cristata	10	-	5								66	5.0	0 - 10
Stipa richardsonii	20	-	-								33	6.6	0 - 20
Festuca scabrella	10	-	-								33	3.3	0 - 10
Poa sandbergii	5	-	-								33	1.6	0 - 5
Stipa occidentalis	5	-	-								33	1.6	0 - 5
Herbs:													
Lithospermum ruderale	5	5	10								100	6.6	5 - 10
Achillea millefolium	< 5	10	< 5								100	5.0	<5- 10
Antennaria roseus	5	< 5	< 5								100	3.3	<5- 5
Solidago spathulata	5	10	-								66	5.0	0 - 10
Astragalus miser	5	-	< 5								66	2.5	0 - 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass Association

PLOT NUMBER	031	068	069										
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs (Continued):													
Allium cernuum	-	< 5	< 5								66	1.6	0 - < 5
Draba verna	-	< 5	< 5								66	1.6	0 - < 5
Balsamorhiza sagittata	25	-	-								33	8.3	0 - 25
Crepis atrabarba	-	-	5								33	1.6	0 - 5
Oxytropis campestris	-	-	5								33	1.6	0 - 5
Oxytropis sericea	5	-	-								33	1.6	0 - 5
Antennaria parvifolia	-	-	< 5								33	.8	0 - < 5
Commandra umbellata	-	-	< 5								33	.8	0 - < 5
Erigeron compositus	< 5	-	-								33	.8	0 - < 5
Erigeron peregrinus	-	-	< 5								33	.8	0 - < 5
Erigeron speciosus	< 5	-	-								33	.8	0 - < 5
Gaillardia aristata	< 5	-	-								33	.8	0 - < 5
Geum triflorum	< 5	-	-								33	.8	0 - < 5
Lomatium macrocarpum	-	-	< 5								33	.8	0 - < 5
Penstemon fruticosus	-	< 5	-								33	.8	0 - < 5
Rhus radicans	-	< 5	-								33	.8	0 - < 5
Taraxacum officinale	-	-	< 5										
Lichens:													
Letharia vulpina	5	-	< 5								66	2.5	0 - 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Spirea - Bearberry Association

PLOT NUMBER	036	059							
PHYSIOGRAPHY									
Altitude	1200	1220							
Aspect	180	260							
Slope	40	30							
Length of Upslope	300	180							
Slope Position	E	E							
Slope Moisture	Shedding	Shedding							
Topography	A	A							
Exposure Type	D	D							
LANDFORM									
Bedrock Type	Limestone	Limestone							
Landform	Talus	Talus							
Soil	Rock	Rock							
Depth (OM)	0	0							
Moisture Regime	D9	D7							
Texture (PM)	A	A							
Acidity (PM)	C	C							
Salinity (PM)	B	B							
Coverage (%)									
Rock	85	80							
Decaying Wood	5	5							
Mineral Soil	5	0							
Humus	5	5							
VEGETATION									
Present Land Use	None	None							
Coverage (%)									
Trees	15	20							
High Shrub	65	85							
Lower Shrub	70	-							
Herb	40	35							
Moss	-	< 5							
Epiphytic	5	10							

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas fir - Spirea - Bearberry Association

PLOT NUMBER	036	059									Presence	Mean Cover	Cover Range
STRATA/SPECIES													
Trees:													
Pseudotsuga menziesii	15	20									100	17.5	15 - 20
Shrubs:													
Juniperus scopulorum	20	30									100	25.0	20 - 30
Populus tremuloides	10	5									100	7.5	5 - 10
Ribes lacustre	< 5	10									100	6.3	<5 - 10
Arctostaphylos uva-ursi	50	-									50	25.0	0 - 50
Juniperus communis	-	25									50	12.5	0 - 25
Shepherdia canadensis	25	-									50	12.5	0 - 25
Spiraea betulifolia	20	-									50	10.0	0 - 20
Rosa gymnocarpa	-	10									50	5.0	0 - 10
Rosa nutkana	5	-									50	2.5	0 - 5
Salix sp.	5	-									50	2.5	0 - 5
Acer glabrum	-	< 5									50	1.3	0 - <5
Amelanchier alnifolia	< 5	-									50	1.3	0 - <5
Cornus stolonifera	< 5	-									50	1.3	0 - <5
Ribes oxyacanthoides	-	< 5									50	1.3	0 - <5
Grasses:													
Agropyron spicatum	< 5	< 5									100	2.5	< 5
Calamagrostis rubescens	10	-									50	5.0	0 - 10
Koeleria cristata	-	5									50	2.5	0 - 5
Poa interior	-	5									50	2.5	0 - 5
Poa gracillima	< 5	-									50	1.3	0 - <5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Spirea - Bearberry Association

PLOT NUMBER	036	059									Presence	Mean Cover	Cover Range
STRATA/SPECIES													
Herbs:													
Penstemon fruticosus	10	10									100	10.0	10
Antennaria roseus	< 5	< 5									100	2.5	<5
Heuchera cylindrica	-	10									50	5.0	0 - 10
Erigonum heracleoides	-	5									50	2.5	0 - 5
Fragaria glauca	5	-									50	2.5	0 - 5
Linnaea borealis	5	-									50	1.3	0 - < 5
Achillea millefolium	< 5	-									50	1.3	0 - < 5
Allium cernuum	< 5	-									50	1.3	0 - < 5
Anemone multifida	< 5	-									50	1.3	0 - < 5
Aster conspicuus	< 5	-									50	1.3	0 - < 5
Astragalus filipes	-	< 5									50	1.3	0 - < 5
Epilobium angusti folium	-	< 5 -									50	1.3	0 - < 5
Galium boreale	< 5	-									50	1.3	0 - < 5
Phlox longifolia	< 5	< 5									50	1.3	0 - < 5
Potentilla arguta	-										50	1.3	0 - < 5
Lichens:													
Letharia vulpina	5	10									100	2.5	5 - 10
Peltigera aphthosa	-	< 5									50	1.3	0 - < 5
Mosses:													
Abietinella abietina	-	10									50	5.0	0 - 10
Hypnum revolutum	-	5									50	2.5	0 - 5
Tortula ruralis	-	< 5									50	1.3	0 - < 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass - Pinegrass Association

PLOT NUMBER	025A	026	035	053	053A	057			
PHYSIOGRAPHY									
Altitude	870	855	1280	1035	900	1280			
Aspect	30	Flat	120	160	90	260			
Slope	20	0	40	35	15	10			
Length of Upslope	125	0	460	460	500	80			
Slope Position	E	C	E	D	D	D			
Slope Moisture	Seepage	Shedding	Seepage	Shedding	Normal	Normal			
Topography	B	D	A	A	A	A			
Exposure Type	Sheltered	D	D	B	A/B	Sheltered			
LANDFORM									
Bedrock Type	Sediment.	Sediment.	Limestone	Basalt	Basalt	Basalt			
Landform	MP	CV	MV	GF	MB	CV			
Soil	EB	EB	EB	EB	EB	EB			
Depth (OM)	1	1	2.5	2.5	2.5	5.0			
Moisture Regime	B4	C6	B4	C6	C5	C5			
Texture (PM)	C	B	B	B	B	B			
Acidity (PM)	C	C	C	C	C	C			
Salinity (PM)	A2	A1	A1	A1	A1	A2			
Coverage (%)									
Rock	0	5	5	10	0	0			
Decaying Wood	5	0	0	5	5	10			
Mineral Soil	25	60	60	70	70	60			
Humus	70	35	35	15	20	30			
VEGETATION									
Present Land Use	Grazing	Grazing	None	Grazing	Grazing	Grazing/ Logging			
Coverage (%)									
Trees	80	30	15	40	30	50			
High Shrub	25	5	5	75	40	25			
Lower Shrub	5	0	0	10	10	0			
Herb	30	95	100	55	60	95			
Moss	5	0	10	0	0	< 5			
Epiphytic	15	5	5	10	10	10			

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass - Pinegrass Association

PLOT NUMBER	025A	026	035	053	053A	057							
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Pseudotsuga menziesii	80	15	15	30	15	45					100	33.3	15 - 80
Pinus ponderosa	-	15	-	10	15	5					67	7.5	0 - 15
Shrubs:													
Juniperus scopulorum	15	5	-	35	-	5					67	10.0	0 - 35
Arctostaphylos uva-ursi	5	-	-	10	10	-					50	4.2	0 - 10
Chrysothamnus nauseosus	-	< 5	-	15	< 5	-					50	3.3	0 - 15
Symphoricarpos albus	5	-	-	< 5	< 5	-					50	1.7	0 - 5
Rosa gymnocarpa	< 5	-	-	< 5	-	< 5					50	1.3	0 -< 5
Amelanchier alnifolia	-	-	-	10	30	-					33	6.7	0 - 30
Juniperus communis	-	-	-	< 5	-	15					33	2.9	0 - 15
Shepherdia canadensis	< 5	-	-	-	10	-					33	2.1	0 - 10
Artemisia tridentata	< 5	< 5	-	-	-	-					33	.8	0 -< 5
Acer glabrum	-	-	5	-	-	-					17	.8	0 - 5
Artemisia campestris	-	-	-	< 5	-	-					17	.4	0 -< 5
Artemisia dracunculus	-	-	-	< 5	-	-					17	.4	0 -< 5
Artemisia frigida	-	-	-	< 5	-	-					17	.4	0 -< 5
Rosa nutkana	< 5	-	-	-	-	-					17	.4	0 -< 5
Grasses:													
Agropyron spicatum	5	30	70	40	30	25					100	33.3	5 - 70
Calamagrostis rubescens	5	10	20	< 5	< 5	40					100	13.3	<5 - 40
Koeleria cristata	5	5	-	-	15	5					67	5.0	0 - 15
Poa pratensis	-	10	-	< 5	-	5					50	2.9	0 - 10
Poa scabrella	-	< 5	5	-	-	-					33	1.3	0 - 5
Stipa occidentalis	-	< 5	-	-	-	< 5					33	.8	0 -< 5
Agropyron caninum	-	-	< 5	-	-	-					17	.4	0 -< 5
Festuca scabrella	-	-	-	-	-	< 5					17	.4	0 -< 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass - Pinegrass Association

PLOT NUMBER	025A	026	035	053	053A	057							
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Grasses (Continued):													
Poa interior	-	-	-	-	-	< 5					17	.4	0 - < 5
Poa juncifolia	-	-	< 5	-	-	-					17	.4	0 - < 5
Poa sandbergii	-	-	-	-	< 5	-					17	.4	0 - < 5
Stipa richardsonii	-	< 5	-	-	-	-					17	.4	0 - < 5
Herbs:													
Achillea millefolium	< 5	< 5	< 5	< 5	< 5	< 5					100	2.2	< 5
Balsamorhiza sagittata	-	15	25	10	5	< 5					83	9.5	0 - 25
Fragaria glauca	-	< 5	< 5	< 5	< 5	< 5					83	2.1	0 - < 5
Lithospermum ruderale	-	5	5	-	5	< 5					67	2.9	0 - 5
Antennaria roseus	< 5	5	< 5	-	-	< 5					67	2.5	0 - 5
Allium cernuum	< 5	-	< 5	-	< 5	< 5					67	1.7	0 - < 5
Geum triflorum	5	5	-	-	-	< 5					50	2.5	0 - 5
Lomatium macrocarpum	-	< 5	< 5	-	-	< 5					50	1.3	0 - < 5
Taraxacum officinale	< 5	< 5	-	-	-	< 5					50	1.3	0 - < 5
Oxytropis sericea	5	< 5	-	-	-	-					33	1.3	0 - < 5
Anemone multifida	< 5	-	-	-	-	< 5					33	.8	0 - < 5
Astragalus miser	< 5	< 5	-	-	-	-					33	.8	0 - < 5
Solidago spathulata	< 5	-	-	< 5	-	-					33	.8	0 - < 5
Astragalus sp.	-	-	10	-	-	-					17	1.6	0 - 10
Penstemon fruticosus	-	-	-	5	-	-					17	.8	0 - < 5
Arabis holbellii	-	-	< 5	-	-	-					17	.4	0 - < 5
Aster conspicuus	-	-	< 5	-	-	-					17	.4	0 - < 5
Cerastium arvense	-	-	-	-	-	< 5					17	.4	0 - < 5
Chenopodium leptophyllum	-	< 5	-	-	-	-					17	.4	0 - < 5
Erigeron compositus	-	-	-	< 5	-	-					17	.4	0 - < 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Douglas-fir - Bunchgrass - Pinegrass Association

PLOT NUMBER	025A	026	035	053	053A	057							
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Erigeron subtrinervis	-	-	< 5	-	-	-					17	.4	0 - < 5
Geranium viscosissium	-	< 5	-	-	-	-					17	.4	0 - < 5
Potentilla arguta	-	-	-	-	-	< 5					17	.4	0 - < 5
Potentilla diversifolia	-	-	-	-	-	< 5					17	.4	0 - < 5
Lichens:													
Letharia vulpina	10	5	5	10	10	10					100	8.3	5 - 10
Alectoria jubata	-	-	5	-	-	< 5					33	1.3	0 - 5
Peltigera polydactyla	5	-	-	-	-	-					17	.83	0 - 5
Alectoria saramentosa	-	-	-	-	-	< 5					17	.4	0 - < 5
Peltigera aphthosa	-	-	-	-	-	< 5					17	.4	0 - < 5
Mosses:													
Polytrichum piliferum	< 5	-	< 5	-	-	-					33	.83	0 - < 5
Tortula ruralis	-	-	10	-	-	-					17	1.7	0 - 10
Drepanocladus uncinatus	5	-	-	-	-	-					17	.83	0 - 5
Brachythecium sp.	< 5	-	-	-	-	-					17	.4	0 - < 5

Environment - Vegetation Tables
Ponderosa Pine - Bunchgrass Bioceoclimatic Zone
Ponderosa Pine - Bunchgrass Association

PLOT NUMBER	076								
PHYSIOGRAPHY									
Altitude	655								
Aspect	240								
Slope	45								
Length of Upslope	60								
Slope Position	D								
Slope Moisture	Shedding								
Topography	A								
Exposure Type	B								
LANDFORM									
Bedrock Type	Basalt								
Landform	CV								
Soil	EB								
Depth (OM)	1								
Moisture Regime	C6								
Texture (PM)	A								
Acidity (PM)	C								
Salinity (PM)	A2								
Coverage (%)									
Rock	10								
Decaying Wood	< 5								
Mineral Soil	55								
Humus	30								
VEGETATION									
Present Land Use	Grazing								
Coverage (%)									
Trees	20								
High Shrub	5								
Lower Shrub	-								
Herb	90								
Moss	-								
Epiphytic	5								

Environment - Vegetation Tables
Ponderosa Pine - Bunchgrass Biogeoclimatic Zone
Ponderosa Pine - Bunchgrass Association

PLOT NUMBER	076												
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Trees:													
Pinus ponderosa	20										100	20	
Shrubs:													
Chrysothamnus nauseosus	5										100	5	
Amelanchier alnifolia	< 5										100	< 5	
Artemisia frigida	< 5										100	< 5	
Grasses:													
Agropyron spicatum	60										100	60	
Koeleria cristata	< 5										100	< 5	
Poa sandbergii	< 5										100	< 5	
Stipa comata	< 5										100	< 5	
Herbs:													
Achillea millefolium	< 5										100	< 5	
Allium cernuum	< 5										100	< 5	
Anemone multifida	< 5										100	< 5	
Antennaria parvifolia	< 5										100	< 5	
Centaurea diffusa	< 5										100	< 5	
Crepis atrabarba	< 5										100	< 5	
Lomatium macrocarpum	< 5										100	< 5	
Opuntia fragilis	< 5										100	< 5	
Salsola kali	< 5										100	< 5	
Mosses:													
Tortula ruralis	10										100	10	

Environment - Vegetation Tables
Intrazonal
Riparian Association

PLOT NUMBER	018A	024	032						
PHYSIOGRAPHY									
Altitude	1400	850	945						
Aspect	Flat	Flat	Flat						
Slope	0	Flat	Flat						
Length of Upslope	600	215	300						
Slope Position	F	F	F						
Slope Moisture	Receiving	Receiving	Receiving						
Topography	B	D	B						
Exposure Type	D	D	C						
LANDFORM									
Bedrock Type	Limestone	Sediment.	Sediment.						
Landform	GF	Alluvium	Alluvium						
Soil	RL	RL	RL						
Depth (OM)	10	2.5	5.0						
Moisture Regime	B3	B3	B3						
Texture (PM)	A	C	B						
Acidity (PM)	C	C	C						
Salinity (PM)	A1	A2	A2						
Coverage (%)									
Rock	20	0	5						
Decaying Wood	10	5	10						
Mineral Soil	25	20	20						
Humus	45	75	65						
VEGETATION									
Present Land Use	None	Grazing	Some Graz-ing						
Coverage (%)									
Trees	-	35	10						
High Shrub	75	100	100						
Lower Shrub	10	0	0						
Herb	100	80	100						
Moss	10	0	< 5						
Epiphytic	0	0	0						

Environment - Vegetation Tables
Intrazonal
Riparian Association

PLOT NUMBER	018A	024	032									
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Trees:													
Alnus rubra	-	10	60								66	23.3	0 - 60
Salix sp.	-	40	20								66	20.0	0 - 40
Populus trichocarpa	-	25	10								66	11.7	0 - 25
Populus tremuloides	-	10	15								66	8.3	0 - 15
Shrubs:													
Ribes lacustre	10	< 5	< 5								100	5.0	< 5 - 10
Cornus stolonifera	-	40	45								66	28.3	0 - 45
Rosa gymnocarpa	-	15	10								66	8.3	0 - 15
Symphoricarpos albus	-	10	5								66	5.0	0 - 10
Rosa nutkana	-	10	< 5								66	4.2	0 - 10
Betula glandulosa	20	-	-								33	6.7	0 - 20
Salix sp.	20	-	-								33	6.7	0 - 20
Amelanchier alnifolia	15	-	-								33	5.0	0 - 15
Vaccinium scoparium	10	-	-								33	3.3	0 - 10
Ribes inerme	5	-	-								33	1.7	0 - 5
Rubus ideaus	-	-	5								33	1.7	0 - 5
Alnus incana	-	-	< 5								33	.83	0 - < 5
Artemisia tridentata	-	< 5	-								33	.83	0 - < 5
Juniperus scopulorum	-	< 5	-								33	.83	0 - < 5
Grasses:													
Agrostis alba	-	15	10								66	8.3	0 - 15
Bromus inermis	-	5	< 5								66	2.5	0 - 5
Agropyron caninum	-	< 5	< 5								66	1.7	0 - < 5
Phleum pratense	-	< 5	< 5								66	1.7	0 - < 5

Environment - Vegetation Tables
Intrazonal
Riparian Association

PLOT NUMBER	018A	024	032										
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Grasses (Continued):													
Carex rostrata	10	-	-								33	3.3	0 - 10
Poa interior	-	10	-								33	3.3	0 - 10
Poa pratensis	-	-	10								33	3.3	0 - 10
Juncus filifolius	5	-	-								33	1.7	0 - 5
Agropyron repens	-	< 5	-								33	.83	0 - < 5
Agropyron smithii	-	-	< 5								33	.83	0 - < 5
Elymus cinereus	-	-	< 5								33	.83	0 - < 5
Festuca rubra	< 5	-	-								33	.83	0 - < 5
Stipa occidentalis	-	-	< 5								33	.83	0 - < 5
Stipa richardsonii	< 5	-	-								33	.83	0 - < 5
Herbs:													
Equisetum arvense	< 5	< 5	70								100	25.0	< 5 - 70
Thalictrum occidentale	20	-	< 5								66	7.5	0 - 20
Osmorhiza chilensis	10	< 5	-								66	4.2	0 - 10
Achillea millefolium	-	5	< 5								66	2.5	0 - 5
Taraxacum officinale	-	5	< 5								66	2.5	0 - 5
Trifolium repens	-	5	< 5								66	2.5	0 - 5
Melilotus alba	-	< 5	< 5								66	1.7	0 - < 5
Vicia americana	< 5	-	< 5								66	1.7	0 - < 5
Equisetum scirpoides	20	-	-								33	6.7	0 - 20
Pedicularis bracteosa	15	-	-								33	5.0	0 - 15
Petasites frigidus var. nivalis	10	-	-								33	3.3	0 - 10
Erigeron speciosus	-	5	-								33	1.7	0 - 5
Galium boreale	5	-	-								33	1.7	0 - 5
Smilacina stellata	5	-	-								33	1.7	0 - 5
Aster ciliolatus	< 5	-	-								33	.83	0 - < 5
Aster conspicuus	-	-	< 5								33	.83	0 - < 5
Disporum trachycarpum	-	-	< 5								33	.83	0 - < 5

Environment - Vegetation Tables
Intrazonal
Riparian Association

PLOT NUMBER	018A	024	032									
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs (Continued):													
Erigeron compositus	-	-	< 5								33	.83	0 - < 5
Heracleum lanatum	-	< 5	-								33	.83	0 - < 5
Lathyrus nevadensis	-	-	< 5								33	.83	0 - < 5
Medicago lupulina	-	-	< 5								33	.83	0 - < 5
Plantago major	-	-	< 5								33	.83	0 - < 5
Sisymbrium altissimum	-	-	< 5								33	.83	0 - < 5
Streptopus amplexifolia	-	-	< 5								33	.83	0 - < 5
Tragopogon dubius	-	-	< 5								33	.83	0 - < 5
Viola canadensis	-	-	< 5								33	.83	0 - < 5
Mosses:													
Brachythecium sp.	-	5	5								66	3.3	0 - 5

Environment - Vegetation Tables
Intrazonal
Engelmann Spruce - Horsetail Association

PLOT NUMBER	030	040	047						
PHYSIOGRAPHY									
Altitude	1065	1615	1200						
Aspect	290	Flat	80						
Slope	5	Flat	< 2						
Length of Upslope	300	244	548						
Slope Position	F	F	F						
Slope Moisture	Receiving	Receiving	Receiving						
Topography	B	D	B						
Exposure Type	C	C	C						
LANDFORM									
Bedrock Type	Basalt	Limestone	Basalt						
Landform	Alluvium	Alluvium	Alluvium						
Soil	EB	EB	EB						
Depth (OM)	7	15	8						
Moisture Regime	B3	B3	B3						
Texture (PM)	B	B	B						
Acidity (PM)	B	C	C						
Salinity (PM)	A1	B	A1						
Coverage (%)									
Rock	5	5	20						
Decaying Wood	40	30	15						
Mineral Soil	5	0	15						
Humus	50	65	50						
VEGETATION									
Present Land Use	Logging	Some grazing	None						
Coverage (%)									
Trees	85	50	70						
High Shrub	90	15	95						
Lower Shrub	-	-	-						
Herb	95	85	45						
Moss	90	90	80						
Epiphytic	30	20	10						

Environment - Vegetation Tables
Intrazonal
Engelmann Spruce - Horsetail Association

PLOT NUMBER	030	040	047							Presence	Mean Cover	Cover Range
STRATA/SPECIES												
Trees:												
Picea engelmannii	85	50	70							100	68.3	50 - 85
Shrubs:												
Ribes lacustre	25	5	30							100	20.0	5 - 30
Salix sp.	5	10	10							100	8.3	5 - 10
Alnus rubra	< 5	-	20							66	7.5	0 - 20
Rubus ideaus	5	-	15							66	6.7	0 - 15
Amelanchier alnifolia	< 5	-	5							66	2.5	0 - 5
Cornus stolonifera	35	-	-							33	11.7	0 - 35
Acer glabrum	5	-	-							33	1.7	0 - 5
Alnus incana	5	-	-							33	1.7	0 - 5
Physocarpus capitatus	-	-	5							33	1.7	0 - 5
Rosa gymnocarpa	5	-	-							33	1.7	0 - 5
Rosa nutkana	-	-	5							33	1.7	0 - 5
Lonicera involucrata	-	-	< 5							33	.8	0 - < 5
Grasses:												
Calamagrostis rubescens	-	< 5	< 5							66	1.7	0 - < 5
Agrostis scabra	-	-	5							33	1.7	0 - 5
Calamagrostis canadensis	-	-	5							33	1.7	0 - 5
Cinnia latifolia	5	-	-							33	1.7	0 - 5
Carex sp.	-	< 5	-							33	.8	0 - < 5
Muhlenbergia sylvatica	< 5	-	-							33	.8	0 - < 5
Phleum pratense	-	-	< 5							33	.8	0 - < 5
Poa grayana	-	< 5	-							33	.8	0 - < 5
Herbs:												
Equisetum arvense	75	< 5	5							100	27.5	< 5 - 75
Osmorhiza chilensis	< 5	< 5	< 5							100	2.5	< 5

Environment - Vegetation Tables
Intrazonal
Engelmann Spruce - Horsetail Association

PLOT NUMBER	030	040	047									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Equisetum scirpoides	5	70	-								66	25.0	0 - 70
Linnaea borealis	10	5	-								66	5.0	0 - 10
Actaea rubra	< 5	-	5								66	2.5	0 - 5
Fragaria glauca	< 5	5	-								66	2.5	0 - 5
Galium triflorum	5	-	< 5								66	2.5	0 - 5
Streptopus amplexifolius	< 5	-	5								66	2.5	0 - 5
Gentiana amarella	-	< 5	< 5								66	1.7	0 - < 5
Petasites frigidus var. nivalis	< 5	-	< 5								66	1.7	0 - < 5
Pyrola chlorontha	< 5	< 5	-								66	1.7	0 - < 5
Pyrola secunda	< 5	-	< 5								66	1.7	0 - < 5
Aster conspicuus	5	-	-								33	1.7	0 - 5
Cystopteris fragilis	-	-	5								33	1.7	0 - 5
Geum macrophyllum	-	-	5								33	1.7	0 - 5
Taraxacum officinale	-	-	5								33	1.7	0 - 5
Arnica cordifolia	-	< 5	-								33	.8	0 - < 5
Disporum trachycarpum	-	-	< 5								33	.8	0 - < 5
Erigeron speciosus	< 5	-	-								33	.8	0 - < 5
Heracleum lanatum	-	-	< 5								33	.8	0 - < 5
Listera caurina	-	-	< 5								33	.8	0 - < 5
Mitella trifida	-	< 5	-								33	.8	0 - < 5
Petasites frigidus	-	-	< 5								33	.8	0 - < 5
Saxifraga lyallii	-	-	< 5								33	.8	0 - < 5
Senecio triangularis	-	< 5	-								33	.8	0 - < 5
Stellaria calycantha	-	-	< 5								33	.8	0 - < 5
Thalictrum occidentale	-	-	< 5								33	.8	0 - < 5
Trollius laxus	-	< 5	-								33	.8	0 - < 5

Environment - Vegetation Tables
Intrazonal
Engelmann Spruce - Horsetail Association

PLOT NUMBER	030	040	047									
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Lichens:													
Alectoria jubata	15	10	5								100	10.0	5 -15
Alectoria saramentosa	15	5	5								100	8.3	5 -15
Peltigera canina	-	5	5								66	2.5	0 - 5
Cladonia gonecha	-	<5	-								33	.8	0 -<5
Stererocaulon alpinum	-	-	<5								33	.8	0 -<5
Moss:													
Aulacomium palustre	-	70	10								66	26.7	0 -70
Hylocomium splendens	20	20	-								66	13.3	0 -20
Brachythecium sp.	<5	-	5								66	2.5	0 - 5
Drepanocladus uncinatus	<5	-	<5								66	1.7	0 -<5
Polytrichum juniperinum	<5	-	<5								66	1.7	0 -<5
Timmia austriaca	-	<5	<5								66	1.7	0 -<5
Pleurozium scherberi	70	-	-								33	23.3	0 -70
Tomenthypnum nitens	-	5	-								33	1.7	0 - 5
Dicranum taurilum	-	-	<5								33	.8	0 -<5
Eurhynchium pulchellum	<5	-	-								33	.8	0 -<5
Mnium insigne	-	-	<5								33	.8	0 -<5
Ptilium crista-castensis	<5	-	-								33	.8	0 -<5

Environment - Vegetation Tables
Intrazonal
Willow - Sedge Bog Association

PLOT NUMBER	013A	014B	017	021
PHYSIOGRAPHY				
Altitude	1735	1600	1385	1675
Aspect	Flat	Flat	Flat	Flat
Slope	< 5	0	0	0
Length of Upslope	275	-	600	180
Slope Position	F	H	F	F
Slope Moisture	Collecting		Collecting	
Topography	D	D	D	D
Exposure Type	C	C	C	D
LANDFORM				
Bedrock Type	Granite	Limestone	Limestone	Limestone
Landform	MP	MP	MP	MP
Soil	Gleysol	Gleysol	Gleysol	Gleysol
Depth (OM)	21 (var)	30	35	60
Moisture Regime	A2	A2	A2	A1
Texture (PM)	A	A	A	B
Acidity (PM)	A	C	C	C
Salinity (PM)	B	B	A1	B
Coverage (%)				
Rock	0	0	0	0
Decaying Wood	5	< 5	5	0
Mineral Soil	5	< 5	0	0
Humus	90	95	95	100
VEGETATION				
Present Land Use	Grazing	Grazing	Grazing	Grazing
Coverage (%)				
Trees	-	-	-	-
High Shrub	90	40	40	20
Lower Shrub	-	-	-	-
Herb	100	100	80	100
Moss	5	80	40	40
Epiphytic	-	-	-	-

Environment - Vegetation Tables
Intrazonal
Willow - Sedge Bog Association

PLOT NUMBER	013A	014B	017	021	Presence	Mean Cover	Cover Range
STRATA/SPECIES							
Shrubs:							
Salix sp.	90	30	20	-	75	35.0	0 - 90
Betula glandulosa	-	-	20	-	25	5.0	0 - 20
Kalmia microphylla	-	-	-	10	25	2.5	0 - 10
Lonicera involucrata	-	10	-	-	25	2.5	0 - 10
Spiraea douglasii	-	-	-	10	25	2.5	0 - 10
Arctostaphylos uva-ursi	-	-	< 5	-	25	.6	0 - < 5
Vaccinium caespitosum	-	-	< 5	-	25	.6	0 - < 5
Grasses:							
Carex rostrata	-	90	40	-	50	32.5	0 - 90
Carex aquatilis	-	-	-	30	25	7.5	0 - 30
Eriophorum viridiarinatum	-	-	-	30	25	7.5	0 - 30
Carex pyrenaica	20	-	-	-	25	5.0	0 - 20
Carex sp.	20	-	-	-	25	5.0	0 - 20
Luzula hitchcockii	-	-	-	5	25	1.3	0 - 5
Luzula piperi	5	-	-	-	25	1.3	0 - 5
Calamagrostis rubescens	< 5	-	-	-	25	.6	0 - < 5
Poa alpina	< 5	-	-	-	25	.6	0 - < 5
Herbs:							
Geum macrophyllum	10	10	30	-	75	12.5	0 - 30
Equisetum arvense	10	-	-	25	50	8.0	0 - 25
Fragaria glauca	15	-	10	-	50	1.3	0 - 15
Petasites frigidus var. nivalis	-	15	-	-	25	3.8	0 - 15
Achillea millefolium	10	-	-	-	25	2.5	0 - 10
Trollius laxus	5	-	-	-	25	1.3	0 - 5

Environment - Vegetation Tables
Intrazonal
Willow - Sedge Bog Association

PLOT NUMBER	013A	014B	017	021									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Aster conspicuus	-	-	-	< 5							25	.6	0 -<5
Parnassia fimbriata	-	-	-	< 5							25	.6	0 -<5
Potentilla diversifolia	-	-	-	< 5							25	.6	0 -<5
Senecio deblis	-	-	< 5	-							25	.6	0 -<5
Senecio megacephalis	-	-	< 5	-							25	.6	0 -<5
Senecio triangularis	< 5	-	-	-							25	.6	0 -<5
Taraxacum officinale	< 5	-	-	-							25	.6	0 -<5
Moss:													
Tomenthypnum nitens	10	20	-	10							75	10.0	0 -20
Sphagum sp.	-	-	-	40							25	10.0	0 -40
Aulacomium palustre	5	-	-	-							25	1.3	0 - 5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Highland Grassland Association

PLOT NUMBER	008A	010	022	016					
PHYSIOGRAPHY									
Altitude	2135	1920	2025	2010					
Aspect	170	180	170	180					
Slope	35	35	40	15					
Length of Upslope	10	30	20	150					
Slope Position	B	B	B	B					
Slope Moisture	Shedding	Shedding	Shedding	Shedding					
Topography	C	C	A	A					
Exposure Type	A/B	A/B	A/B	A/B					
LANDFORM									
Bedrock Type	Volcanic	Limestone	Limestone	Limestone					
Landform	MV	MV	CV	CV					
Soil	DYB	DYB	DYB	EB					
Depth (OM)	1	1	1	1					
Moisture Regime	D9	D8	D9	D8					
Texture (PM)	B	B	B	B					
Acidity (PM)	B	C	C	C					
Salinity (PM)	B	B	B	B					
Coverage (%)									
Rock	45	5	40	30					
Decaying Wood	< 5	0	0	0					
Mineral Soil	25	30	40	25					
Humus	30	70	20	45					
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing					
Coverage (%)									
Trees	-	-	-	-					
High Shrub	5	15	10	20					
Lower Shrub	10	30	15	25					
Herb	60	80	50	40					
Moss	-	-	-	-					
Epiphytic	-	-	-	-					

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Highland Grassland Association

PLOT NUMBER	008A	010	022	016									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Shrubs:													
Arctostaphylos uva-ursi	10	30	15	25							100	20.0	10-30
Shepherdia canadensis	-	5	< 5	10							75	4.4	0 -10
Juniperus scopulorum	-	5	-	10							50	3.8	0 -10
Artemisia frigida	-	5	5	-							50	2.5	0 - 5
Juniperus communis	< 5	-	< 5	-							50	1.3	0 -<5
Populus tremuloides	5	-	-	-							25	1.3	0 - 5
Pinus contorta	-	-	< 5	-							25	.6	0 -<5
Rosa gymnocarpa	-	-	-	< 5							25	.6	0 -<5
Grasses:													
Calamagrostis purpurascens	35	-	10	5							75	12.5	0 -35
Calamagrostis rubescens	-	40	< 5	< 5							75	11.3	0 -40
Poa grayana	< 5	5	< 5	-							75	2.5	0 - 5
Danthonia intermedia	-	< 5	< 5	< 5							75	1.9	0 -<5
Agropyron spicatum	-	10	20	-							50	7.5	0 -20
Festuca ovina var. brevifolia	10	-	5	-							50	3.6	0 -10
Carex albo-nigrum	10	-	< 5	-							50	3.1	0 -10
Stipa occidentalis	-	10	< 5	-							50	3.1	0 -10
Poa interior	-	< 5	-	5							50	1.9	0 - 5
Agropyron caninum	-	< 5	-	< 5							50	1.3	0 -<5
Koeleria cristata	-	5	-	-							25	1.3	0 - 5
Poa scabrella	-	-	-	5							25	1.3	0 - 5
Carex hoodii	-	-	-	< 5							25	.6	0 -<5
Carex petasata	-	< 5	-	-							25	.6	0 -<5
Phleum alpinum	-	< 5	-	-							25	.6	0 -<5
Poa alpina	-	< 5	-	-							25	.6	0 -<5
Poa gracillima	-	-	-	< 5							25	.6	0 -<5
Stipa richardsonii	-	-	< 5	-							25	.6	0 -<5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Highland Grassland Association

PLOT NUMBER	008A	010	022	016									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Grasses (Continued):													
Trisetum spicatum	-	< 5	-	-							25	.6	0 -<5
Herbs:													
Geum triflorum	< 5	5	5	10							100	5.6	<5-10
Anemone multifida	< 5	5	< 5	< 5							100	3.1	<5- 5
Cerastium arvense	5	< 5	< 5	< 5							100	3.1	<5- 5
Achillea millefolium	-	5	5	5							75	3.6	0 - 5
Antennaria alpina	< 5	< 5	5	-							75	2.5	<5- 5
Geranium viscosissimum	-	< 5	< 5	< 5							75	1.9	0 -<5
Arenaria capillaris	-	5	-	< 5							50	2.5	0 - 5
Allium cernuum	-	5	-	< 5							50	1.9	0 - 5
Eriogonum heracleoides	-	5	< 5	-							50	1.9	0 - 5
Fragaria glauca	-	-	5	< 5							50	1.9	0 - 5
Arabis drummondii	-	< 5	< 5	-							50	1.3	0 -<5
Gentiana amarella	-	< 5	-	< 5							50	1.3	0 -<5
Polemonium pulcherrimum	-	< 5	-	< 5							50	1.3	0 -<5
Potentilla diversifolia	-	-	< 5	< 5							50	1.3	0 -<5
Silene douglasii	< 5	< 5	-	-							50	1.3	0 -<5
Taraxacum officinale	-	10	-	-							25	2.5	0 -10
Antennaria roseus	-	-	-	5							25	1.3	0 - 5
Astragalus miser	-	< 5	-	-							25	.6	0 -<5
Balsamorhiza sagittata	-	-	< 5	-							25	.6	0 -<5
Castilleja miniata	-	-	-	< 5							25	.6	0 -<5
Erigeron compositus	-	-	-	< 5							25	.6	0 -<5
Erigeron speciosus	-	-	-	< 5							25	.6	0 -<5
Erigeron subtrinervis	-	< 5	-	-							25	.6	0 -<5
Galium boreale	-	< 5	-	-							25	.6	0 -<5
Hedysarum boreale	-	< 5	-	-							25	.6	0 -<5
Heuchera cylindrica	-	-	< 5	-							25	.6	0 -<5
Oxytropis campestris	-	-	-	< 5							25	.6	0 -<5

Environment - Vegetation Tables
Engelmann Spruce - Subalpine Fir Biogeoclimatic Zone
Highland Grassland Association

PLOT NUMBER	008A	010	022	016									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Penstemon procerus	-	-	-	< 5							25	.6	0 -<5
Rhinanthus crista-galli	-	-	-	< 5							25	.6	0 -<5
Sedum lancolatum	-	-	-	< 5							25	.6	0 -<5
Sedum stenopetalum	-	< 5	-	-							25	.6	0 -<5
Senecio cymbalarioides	-	-	-	< 5							25	.6	0 -<5
Senecio douglasii	< 5	-	-	-							25	.6	0 -<5
Senecio megacephalus	-	-	-	< 5							25	.6	0 -<5
Silene parryi	-	-	-	< 5							25	.6	0 -<5
Solidago spathulata	-	-	-	< 5							25	.6	0 -<5
Zygadenus venenosus	-	-	-	< 5							25	.6	0 -<5
Mosses:													
Brachythecium sp.	-	5	-	-							25	1.3	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Kentucky Bluegrass Association

PLOT NUMBER	004	038B	062	063	065				
PHYSIOGRAPHY									
Altitude	1370	1600	1370	1100	1250				
Aspect	200	260	320	300	Flat				
Slope	5	10	10	15	Flat				
Length of Upslope	60	152	60	152	300				
Slope Position	D	B	C	F	F				
Slope Moisture	Receiving	Shedding	Normal	Seepage	Seepage				
Topography	D	C	A	B	B				
Exposure Type	B	A/B	A	D	D				
LANDFORM									
Bedrock Type	Limestone	Limestone	Basalt	Greenstone	Greenstone				
Landform	MP	MP	MP	GF	MP				
Soil	BL	BL	BL	BL	BL				
Depth (OM)	1	1	1	1	1				
Moisture Regime	C5	D7	C5	B4	B4				
Texture (PM)	C	B	B	B	B				
Acidity (PM)	C	C	C	C	B				
Salinity (PM)	A1	B	A2	B	B				
Coverage (%)									
Rock	0	20	5	10	10				
Decaying Wood	0	0	0	0	0				
Mineral Soil	40	60	75	70	80				
Humus	60	20	20	20	10				
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing	Grazing				
Coverage (%)									
Trees	-	-	-	-	-				
High Shrub	5	< 5	5	< 5	-				
Lower Shrub	-	-	-	-	-				
Herb	100	95	100	100	100				
Moss	< 5	< 5	< 5	< 5	< 5				
Epiphytic	-	-	-	-	-				

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Kentucky Bluegrass Association

PLOT NUMBER	004	038B	062	063	065								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Shrubs:													
Rosa gymnocarpa	5	< 5	5	< 5	-						80	3.0	0 - 5
Artemisia frigida	-	< 5	-	-	-						20	.5	0 -<5
Grasses:													
Poa pratensis	30	25	25	20	80						100	36.0	20-80
Stipa occidentalis	20	5	10	5	-						80	8.0	0 -20
Stipa richardsonii	5	-	30	< 5	< 5						80	8.0	0 -30
Koeleria cristata	5	-	5	10	-						60	4.0	0 -10
Juncus tenuis	-	-	-	35	< 5						40	7.5	0 -35
Poa scabrella	-	10	-	-	< 5						40	2.5	0 -10
Stipa comata	10	-	-	-	< 5						40	2.5	0 -10
Poa gracillima	< 5	5	-	-	-						40	1.5	0 - 5
Poa sandbergii	5	< 5	-	-	-						40	1.5	0 - 5
Festuca ovina var. rydbergii	< 5	< 5	-	-	-						40	1.0	0 -<5
Juncus balticus	5	-	-	-	-						20	1.0	0 - 5
Agropyron caninum	< 5	-	-	-	-						20	.5	0 -<5
Agropyron spicatum	-	-	-	-	< 5						20	.5	0 -<5
Calamagrostis rubescens	-	< 5	-	-	-						20	.5	0 -<5
Carex petaseta	-	-	-	-	< 5						20	.5	0 -<5
Carex praticola	< 5	-	-	-	-						20	.5	0 -<5
Danthonia intermedia	-	< 5	-	-	-						20	.5	0 -<5
Poa cusickii	-	< 5	-	-	-						20	.5	0 -<5
Poa nevadensis	< 5	-	-	-	-						20	.5	0 -<5
Herbs:													
Achillea millefolium	5	5	5	10	5						100	6.0	5 -10
Anemone multifida	5	5	< 5	< 5	< 5						100	3.5	<5- 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Kentucky Bluegrass Association

PLOT NUMBER	004	0388	062	063	065								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Eriogonum heracleoides	< 5	< 5	< 5	< 5	< 5						100	2.5	< 5
Geum triflorum	-	5	20	5	10						80	8.0	0 -20
Taraxacum officinale	5	10	-	10	10						80	7.0	0 -10
Fragaria glauca	-	5	< 5	< 5	5						80	5.0	0 - 5
Potentilla diversifolia	< 5	< 5	5	-	5						80	2.5	0 - 5
Cerastium arvense	-	< 5	< 5	< 5	< 5						80	2.0	0 -<5
Antennaria roseus	10	5	-	5	-						60	4.0	0 -10
Erigeron compositus	< 5	5	-	5	-						60	2.5	0 - 5
Fritillaria pudica	< 5	-	< 5	< 5	-						60	1.5	0 -<5
Geranium viscosissimum	< 5	< 5	< 5	-	-						60	1.5	0 -<5
Claytonia lancolata	10	-	5	-	-						40	3.0	0 -10
Heuchera cylindrica	-	< 5	10	-	-						40	2.5	0 -10
Arabis holboellii	< 5	< 5	-	-	-						40	1.0	0 -<5
Galium boreale	< 5	< 5	-	-	-						40	1.0	0 -<5
Penstemon procerus	< 5	< 5	-	-	-						40	1.0	0 -<5
Astragalus purshii	< 5	< 5	-	-	-						20	1.0	0 -<5
Lithospermum ruderale	5	-	-	-	-						20	1.0	0 - 5
Allium cernuum	-	-	-	< 5	-						20	.5	0 -<5
Antennaria umbrinella	-	< 5	-	-	-						20	.5	0 -<5
Aster campestris	< 5	-	-	-	-						20	.5	0 -<5
Astragalus miser	-	-	-	< 5	-						20	.5	0 -<5
Dodocathon pauciflorum	< 5	-	-	-	-						20	.5	0 -<5
Draba verna	-	-	-	< 5	-						20	.5	0 -<5
Lomatium macrocarpum	-	-	-	< 5	-						20	.5	0 -<5
Oxytropsis sericea	< 5	-	-	-	-						20	.5	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Kentucky Bluegrass Association

PLOT NUMBER	004	038B	062	063	065						Presence	Mean Cover	Cover Range
STRATA/SPECIES													
Herbs (Continued):													
Plantago major	< 5	-	-	-	-						20	.5	0 -<5
Potentilla arguta	< 5	-	-	-	-						20	.5	0 -<5
Potentilla glandulosa	-	< 5	-	-	-						20	.5	0 -<5
Potentilla gracilis	-	< 5	-	-	-						20	.5	0 -<5
Sedum stenopetalum	-	< 5	-	-	-						20	.5	0 -<5
Silene douglasii	< 5	-	-	-	-						20	.5	0 -<5
Zigadenus venenosus	-	-	-	< 5	-						20	.5	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Bunchgrass - Kentucky Bluegrass Association

PLOT NUMBER	049	050	055	056	058	060	060A	061	061A
PHYSIOGRAPHY									
Altitude	1125	1080	1020	1035	1160	1250	1125	1175	1175
Aspect	90	300	120	270	200	270	270	Flat	Flat
Slope	5	15	5	20	10	20	15	5	5
Length of Upslope	300	600	600	180	150	150	210	545	545
Slope Position	F	E	F	E	E	C	E	F	F
Slope Moisture	Normal	Seepage	Normal	Seepage	Seepage	Normal	Seepage	Seepage	Seepage
Topography	A	A	A	A	A	A	B	B	B
Exposure Type	A/B	A/B	D	B	B	B	Sheltered	D	D
LANDFORM									
Bedrock Type	Basalt	Basalt	Basalt	Basalt	Limestone	Limestone	Limestone	Basalt	Basalt
Landform	MP	MP	MP	MP	MP	MP	MP	MP	MP
Soil	BL	BL	BL	BL	BL	BL	BL	BL	BL
Depth (OM)	1	1	1	1	1	1	1	1	1
Moisture Regime	C5	C5	C5	C5	C6	C5	C5	B4	B4
Texture (PM)	B	B	B	B	B	B	B	B	B
Acidity (PM)	C	C	C	C	C	C	C	C	C
Salinity (PM)	B	A1	A2	A2	A1	A1	A1	A1	A1
Coverage (%)									
Rock	0	10	5	5	20	0	0	5	0
Decaying Wood	0	0	0	0	0	0	0	0	0
Mineral Soil	60	70	85	80	85	70	80	80	70
Humus	40	20	10	15	5	30	20	15	30
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing
Coverage (%)									
Trees	-	-	-	-	-	-	-	-	-
High Shrub	-	20	10	5	10	15	30	10	5
Lower Shrub	-	-	-	-	-	-	-	-	-
Herb	80	100	100	100	60	100	55	50	95
Moss	0	0	0	0	0	0	0	0	0
Epiphytic	-	-	-	-	-	-	-	-	-

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Bunchgrass - Kentucky Bluegrass Association

PLOT NUMBER	049	050	055	056	058	060	060A	061	061A				
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Shrubs:													
Artemisia frigida	-	10	< 5	-	< 5	10	30	5	5		78	7.2	0 -30
Chrysothamus nauseosus	-	10	5	5	< 5	-	-	5	-		56	3.1	0 -10
Rosa gymnocarpa	-	-	< 5	< 5	5	< 5	-	< 5	-		56	1.7	0 - 5
Juniperus communis	-	-	-	-	< 5	5	-	-	-		22	.8	0 - 5
Artemisia tridentata	-	-	5	-	-	-	-	-	-		11	.56	0 - 5
Artemisia campestris	-	-	-	-	-	-	-	< 5	-		11	.28	0 -<5
Juniperus scopulorum	-	-	-	-	< 5	-	-	-	-		11	.28	0 -<5
Rosa nutkana	-	< 5	-	-	-	-	-	-	-		11	.28	0 -<5
Grasses:													
Poa pratensis	20	-	10	5	20	< 5	< 5	10	40		89	12.2	0 -40
Agropyron spicatum	-	40	10	50	-	35	10	< 5	< 5		78	16.7	0 -50
Stipa occidentalis	-	< 5	5	< 5	-	< 5	-	20	10		67	4.7	0 -20
Hordeum jubatum	-	20	40	5	-	-	-	5	20		56	10.0	0 -40
Koeleria cristata	-	15	10	-	-	5	-	-	10		44	4.4	0 -15
Stipa richardsonii	-	-	-	-	-	25	10	-	5		33	4.4	0 -25
Stipa comata	10	-	5	-	-	-	-	-	-		22	1.7	0 -10
Agropyron caninum	-	-	< 5	-	-	-	-	-	< 5		22	.56	0 -<5
Poa scabrella	-	< 5	-	-	-	-	-	-	< 5		22	.56	0 -<5
Festuca scabrella	-	-	-	35	-	-	-	-	-		11	3.9	0 -35
Juncus tenuis	-	-	-	-	15	-	-	-	-		11	1.7	0 -15
Juncus balticus	-	-	-	-	-	-	-	-	5		11	.56	0 - 5
Poa interior	-	-	-	-	5	-	-	-	-		11	.56	0 - 5
Oryzopsis hymenoides	-	-	< 5	-	-	-	-	-	-		11	.28	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Bunchgrass - Kentucky Bluegrass Association

PLOT NUMBER	049	050	055	056	058	060	060A	061	061A				
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs:													
Achillea millefolium	15	< 5	5	-	< 5	< 5	10	5	< 5		89	5.0	0 -15
Taraxacum officinale	10	< 5	< 5	5	10	-	5	< 5	< 5		89	4.4	0 -10
Geum triflorum	-	< 5	< 5	< 5	5	< 5	< 5	< 5	< 5		89	2.5	0 - 5
Erigeron compositus	20	5	5	-	-	< 5	5	< 5	5		78	5.0	0 -20
Lomatium macrocarpum	5	-	< 5	< 5	-	5	< 5	-	-		55	1.9	0 - 5
Antennaria roseus	-	5	10	-	-	-	-	< 5	< 5		44	2.2	0 -10
Allium cernuum	-	< 5	-	< 5	-	< 5	< 5	-	-		44	1.1	0 -<5
Eriogonum heracleoides	-	-	< 5	-	-	< 5	-	< 5	< 5		44	1.1	0 -<5
Balsamorhiza sagittata	-	-	-	< 5	-	10	10	-	-		33	2.5	0 -10
Fritillaria pudica	5	< 5	< 5	-	-	-	-	-	-		33	1.1	0 - 5
Astragalus purshii	-	-	-	-	< 5	-	< 5	< 5	-		33	.83	0 -<5
Draba verna	< 5	-	< 5	< 5	-	-	-	-	-		33	.83	0 -<5
Erigeron linearis	-	< 5	< 5	-	-	< 5	-	-	-		33	.83	0 -<5
Gaillardia aristata	-	< 5	-	-	-	< 5	< 5	-	-		33	.83	0 -<5
Potentilla hippiana	-	-	-	-	-	< 5	-	< 5	< 5		33	.83	0 -<5
Zigadenus venenosus	< 5	< 5	< 5	-	-	-	-	-	-		33	.83	0 -<5
Heuchera cylindrica	-	< 5	-	-	-	-	-	< 5	-		22	.56	0 -<5
Opuntia fragilis	-	< 5	< 5	-	-	-	-	-	-		22	.56	0 -<5
Oxtropis campestris	-	< 5	-	-	-	-	< 5	-	-		22	.56	0 -<5
Potentilla diversifolia	-	-	-	-	-	< 5	-	< 5	-		22	.56	0 -<5
Fragaria glauca	5	-	-	-	-	-	-	-	-		11	.56	0 -<5
Lithospermum ruderale	-	5	-	-	-	-	-	-	-		11	.56	0 - 5
Aster campestris	-	< 5	-	-	-	-	-	-	-		11	.28	0 -<5
Cerastium arvense	-	-	-	-	-	-	-	-	< 5		11	.28	0 -<5
Chaenatis douglasii	-	-	< 5	-	-	-	-	-	-		11	.28	0 -<5
Phlox longifolia	-	-	-	-	-	< 5	-	-	-		11	.28	0 -<5
Saxifraga rhomboidea	< 5	-	-	-	-	-	-	-	-		11	.28	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Sagebrush - Bluebunch Wheatgrass Association

PLOT NUMBER	023	023A	025	029					
PHYSIOGRAPHY									
Altitude	870	880	880	945					
Aspect	290	90	60	270					
Slope	20	5	15	10					
Length of Upslope	10	150	400	350					
Slope Position	F	D	E	D					
Slope Moisture	Shedding	Normal	Seepage	Normal					
Topography	A	B	A	A					
Exposure Type	D	D	D	D					
LANDFORM									
Bedrock Type	Sediment.	Sediment.	Sediment.	Sediment.					
Landform	GF/MP	GF/MP	MP	MP					
Soil	BL	BL	BL	BL					
Depth (OM)	0	1	1	1					
Moisture Regime	D7	C5	B4	C6					
Texture (PM)	B	B	C	B					
Acidity (PM)	C	C	C	B					
Salinity (PM)	A1	A1	A2	A2					
Coverage (%)									
Rock	5	5	5	5					
Decaying Wood	0	0	0	0					
Mineral Soil	90	70	85	90					
Humus	5	25	10	5					
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing					
Coverage (%)									
Trees	-	-	-	-					
High Shrub	90	80	80	85					
Lower Shrub	-	-	< 5	-					
Herb	95	95	55	50					
Moss	-	-	0	0					
Epiphytic	-	< 5	< 5	-					

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Sagebrush - Bluebunch Wheatgrass Association

PLOT NUMBER	023	023A	025	029									
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Trees:													
Pinus ponderosa	-	< 5	5	-							50	1.9	0 - 5
Pseudotsuga menziesii	-	< 5	-	-							25	.6	0 -<5
Shrubs:													
Artemisia tridentata	80	60	35	85							100	65.0	35-85
Juniperus scopulorum	5	5	20	-							75	7.5	0 -20
Artemisia frigida	< 5	5	< 5	-							75	2.5	0 - 5
Rosa nutkana	-	< 5	10	-							50	3.1	0 -10
Chrysothamnus nauseosus	-	5	< 5	-							50	1.9	0 - 5
Juniperus communis	5	< 5	-	-							50	1.9	0 - 5
Pinus ponderosa	5	< 5	-	-							50	1.9	0 - 5
Arctostaphylos uva-ursi	-	< 5	< 5	-							50	1.3	0 -<5
Symphoricarpos albus	-	< 5	< 5	-							50	1.3	0 -<5
Pseudotsuga menziesii	5	-	-	-							25	1.3	0 - 5
Artemisia campestris	-	-	< 5	-							25	.6	0 -<5
Rosa gymnocarpa	-	-	< 5	-							25	.6	0 -<5
Shepherdia canadensis	-	-	< 5	-							25	.6	0 -<5
Grasses:													
Agropyron spicatum	35	60	30	30							100	38.9	30-60
Stipa richardsonii	< 5	15	-	-							50	4.4	0 -15
Stipa occidentalis	10	-	-	-							25	2.5	0 -10
Koeleria cristata	-	-	5	-							25	1.3	0 - 5
Poa pratensis	-	-	-	5							25	1.3	0 - 5
Poa scabrella	-	-	5	-							25	1.3	0 - 5
Stipa comata	5	-	-	-							25	1.3	0 - 5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Sagebrush - Bluebunch Wheatgrass Association

PLOT NUMBER	023	023A	025	029								
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Grasses (Continued):													
Agropyron caninum	-	-	< 5	-							25	.6	0 -<5
Festuca scabrella	-	< 5	-	-							25	.6	0 -<5
Poa interior	-	-	< 5	-							25	.6	0 -<5
Poa juncifolia	-	-	-	< 5							25	.6	0 -<5
Herbs:													
Achillea millefolium	< 5	< 5	< 5	< 5							100	2.5	< 5
Lithospermum ruderale	10	5	5	-							75	5.0	0 -10
Antennaria roseus	5	5	5	-							75	3.8	0 - 5
Lomatium macrocarpum	< 5	< 5	-	< 5							75	1.9	0 -<5
Oxtropis sericea	< 5	< 5	-	< 5							75	1.9	0 -<5
Balsamorhiza sagittata	< 5	-	-	10							50	3.1	0 -10
Geum triflorum	5	5	-	-							50	2.5	0 - 5
Allium cernuum	-	5	< 5	-							50	1.9	0 -<5
Commandra umbellata	-	-	< 5	< 5							50	1.3	0 -<5
Erigeron linearis	< 5	-	-	< 5							50	1.3	0 -<5
Fragaria glauca	-	< 5	< 5	-							50	1.3	0 -<5
Sedum stenopetalum	< 5	< 5	-	-							50	1.3	0 -<5
Solidago spathulata	< 5	< 5	-	-							50	1.3	0 -<5
Taraxacum officinale	-	< 5	< 5	-							50	1.3	0 -<5
Opuntia fragilis	15	-	-	-							25	3.8	0 -<5
Erigeron compositus	5	-	-	-							25	1.3	0 - 5
Anemone multifida	-	-	-	< 5							25	.6	0 -<5
Astragalus miser	-	-	-	< 5							25	.6	0 -<5
Draba verna	-	-	-	< 5							25	.6	0 -<5
Erigeron speciosus	-	< 5	-	-							25	.6	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Sagebrush - Bluebunch Wheatgrass Association

PLOT NUMBER	023	023A	025	029									
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Herbs (Continued):													
Erigeron subtrineruis	-	-	<5	-							25	.6	0 -<5
Fritillaria pudica	-	-	-	<5							25	.6	0 -<5
Heuchera cylindrica	-	<5	-	-							25	.6	0 -<5
Phlox longifolia	-	-	<5	-							25	.6	0 -<5
Vicia americana	-	-	<5	-							25	.6	0 -<5
Zigadenus venenosus	-	-	-	<5							25	.6	0 -<5
Lichens:													
Letharia vulpina	-	<5	<5	-							50	1.3	0 -<5
Peltigera aphthosa	-	<5	-	-							25	.6	0 -<5
Mosses:													
Brachythecium sp.	-	<5	-	-							25	.6	0 -<5

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Saline Depressional Association

PLOT NUMBER	054	070	071						
PHYSIOGRAPHY									
Altitude	1025	1143	1125						
Aspect	Flat	Flat	Flat						
Slope	Flat	Flat	Flat						
Length of Upslope	609.6	762	609.6						
Slope Position	F	H	H						
Slope Moisture	Collect.	Collect.	Collect.						
Topography	D	B	B						
Exposure Type	D	D	Sheltered						
LANDFORM									
Bedrock Type	Basalt	Basalt	Basalt						
Landform	MP	MP	MP						
Soil	BL	BL	BL						
Depth (OM)	0	1	1						
Moisture Regime	A1	A1	B3						
Texture (PM)	B	B	B						
Acidity (PM)	C	C	C						
Salinity (PM)	A2	A3	A2						
Coverage (%)									
Rock	0	0	0						
Decaying Wood	0	0	0						
Mineral Soil	0	30	60						
Humus	0	70	40						
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing						
Coverage (%)									
Trees	-	-	-						
High Shrub	-	< 5	< 5						
Lower Shrub	-	-	-						
Herb	100	100	100						
Moss	-	-	-						
Epiphytic	-	-	-						

Environment - Vegetation Tables
Interior Douglas-fir Biogeoclimatic Zone
Saline Depressional Association

PLOT NUMBER	054	070	071									
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Shrubs:													
Chrysothamnus nauseosus	-	< 5	-								33	.8	0 -<5
Rosa nutkana	-	-	< 5								33	.8	0 -<5
Grasses:													
Juncus balticus	50	30	30								100	36.6	30-50
Agrostis alba	5	10	50								100	21.7	5 -50
Hordeum jubatum	90	60	-								66	50.0	0 -90
Distichlis stricta	5	60	-								66	21.7	0 -60
Poa pratensis	-	10	< 5								66	4.2	0 -10
Carex rostrata	30	-	-								33	10.0	0 -30
Agropyron caninum	-	-	10								33	.8	0 -<5
Eleocharis palustris	10	-	-								33	3.3	0 -10
Stipa occidentalis	-	5	-								33	1.7	0 - 5
Phleum pratense	-	-	< 5								33	.8	0 -<5
Spartina gracilis	-	< 5	-								33	.8	0 -<5
Herbs:													
Taraxacum officinale	-	< 5	20								66	7.5	0 -20
Viola adunca	-	< 5	< 5								66	1.7	0 -<5
Achillea millefolium	-	-	10								33	3.3	0 -10
Draba verna	-	< 5	-								33	.8	0 -<5
Erigeron compositus	-	< 5	-								33	.8	0 -<5
Erigeron linearis	-	< 5	-								33	.8	0 -<5
Potentilla diversifolia	-	-	< 5								33	.8	0 -<5

Environment - Vegetation Tables
Ponderosa Pine - Bunchgrass Biogeoclimatic Zone
Big Sagebrush - Bunchgrass Association

PLOT NUMBER	078	077	075	074	073	072			
PHYSIOGRAPHY									
Altitude	520	610	670	500	550	580			
Aspect	240	100	90	260	110	80			
Slope	70	10	15	20	70	10			
Length of Upslope	125	300	10	60	450	300			
Slope Position	E	H	H	D	D	D			
Slope Moisture	Shedding	Receiving	Normal	Normal	Shedding	Normal			
Topography	A	B	A	A	A	A			
Exposure Type	B	Sheltered	Sheltered	B	Sheltered	Sheltered			
LANDFORM									
Bedrock Type	Shale	Basalt	Basalt	Basalt	Green-stone	Green-stone			
Landform	MP	MP	MP	MP	MP	CV			
Soil	Brown	Brown	Brown	Brown	Brown	Brown			
Depth (OM)	1	1	1	1	1	1			
Moisture Regime	D7	C5	C5	C5	D7	C6			
Texture (PM)	A	B	B	B	B	B			
Acidity (PM)	C	C	C	C	C	C			
Salinity (PM)	A2	A2	A2	A2	A2	A2			
Coverage (%)									
Rock	20	< 5	5	5	5	5			
Decaying Wood	0	0	0	0	0	0			
Mineral Soil	75	85	80	85	95	70			
Humus	< 5	5	10	10	0	25			
VEGETATION									
Present Land Use	Grazing	Grazing	Grazing	Grazing	Grazing	Grazing			
Coverage (%)									
Trees	-	-	-	-	-	-			
High Shrub	25	60	60	40	25	50			
Lower Shrub	-	-	-	-	-	-			
Herb	85	30	50	60	100	45			
Moss	-	-	-	-	-	-			
Epiphytic	-	-	-	-	-	-			

Environment - Vegetation Tables
Ponderosa Pine - Bunchgrass Biogeoclimatic Zone
Big Sagebrush - Bunchgrass Association

PLOT NUMBER	078	077	075	074	073	072							
STRATA/SPECIES											Pres-ence	Mean Cover	Cover Range
Shrubs:													
Artemisia tridentata	5	50	60	30	25	50					100	36.6	5 - 60
Artemisia frigida	< 5	< 5	-	< 5	< 5	< 5					83	2.1	0 - < 5
Chrysothamnus nauseosus	15	10	-	10	-	-					50	5.8	0 - 15
Amelanchier alnifolia	-	-	-	-	< 5	< 5					33	.83	0 - < 5
Rosa spp.	< 5	-	-	-	-	-					17	.4	0 - < 5
Grasses:													
Agropyron spicatum	75	< 5	5	30	70	< 5					100	30.8	< 5 - 75
Poa sandbergii	< 5	< 5	5	5	5	5					100	4.2	0 - 5
Sporobolus cryptandrus	-	10	< 5	10	-	15					67	6.2	0 - 15
Stipa comata	-	5	25	5	-	< 5					67	6.2	0 - 25
Bromus tectorum	-	5	-	-	5	-					33	1.7	0 - 5
Koeleria cristata	-	-	5	-	5	-					33	1.7	0 - 5
Agropyron cristatum	-	-	< 5	-	-	-					17	.4	0 - < 5
Herbs:													
Erigeron linearis	< 5	5	< 5	5	-	10					83	4.2	0 - 10
Opuntia fragilis	< 5	< 5	< 5	5	-	< 5					83	2.5	0 - 5
Draba verna	-	< 5	< 5	< 5	< 5	< 5					83	2.1	0 - < 5
Lithospermum ruderale	< 5	< 5	< 5	-	< 5	< 5					83	2.1	0 - < 5
Antennaria dimorpha	-	< 5	< 5	< 5	-	5					67	2.1	0 - 5
Salsola kali	< 5	< 5	< 5	< 5	-	-					67	.8	0 - < 5
Lomatium macrocarpum	-	-	5	< 5	< 5	-					50	1.7	0 - 5
Achillea millefolium	< 5	-	< 5	-	< 5	-					50	1.2	0 - < 5
Descurainia sophia	< 5	-	-	-	< 5	< 5					50	1.2	0 - < 5
Astragalus miser	-	-	-	-	10	5					33	2.5	0 - 10
Antennaria roseus	-	-	5	-	-	< 5					33	1.2	0 - 5
Commandra umbellata	< 5	-	-	-	-	5					33	1.2	0 - 5

Environment - Vegetation Tables
Ponderosa Pine - Bunchgrass Biogeoclimatic Zone
Big Sagebrush - Bunchgrass Association

PLOT NUMBER	078	077	075	074	073	072							
STRATA/SPECIES											Presence	Mean Cover	Cover Range
Herbs (Continued):													
Erigeron compositus	-	-	-	-	< 5	< 5					33	.8	0 - < 5
Fritillaria pudica	-	-	-	-	< 5	< 5					33	.8	0 - < 5
Allium cernuum	-	-	-	-	< 5	-					17	.4	0 - < 5
Antennaria anapholoides	< 5	-	-	-	-	-					17	.4	0 - < 5
Balsamorhiza sagittata	< 5	-	-	-	-	-					17	.4	0 - < 5
Crepis atrabarba	-	-	-	-	< 5	-					17	.4	0 - < 5
Eriogonum heracleoides	-	-	-	-	< 5	-					17	.4	0 - < 5
Fragaria glauca	-	-	-	-	< 5	-					17	.4	0 - < 5
Geum triflorum	-	-	-	-	< 5	-					17	.4	0 - < 5
Lewsia redivida	-	< 5	-	-	-	-					17	.4	0 - < 5
Taraxacum officinale	-	-	-	-	< 5	-					17	.4	0 - < 5
Mosses:													
Brachythecium sp.	-	-	-	-	< 5	-					17	.4	0 - < 5

APPENDIX D

BIOPHYSICAL UNITS IDENTIFIED IN THE LOCAL STUDY AREA

BIOPHYSICAL UNIT 1AB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial - fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam
(moderately stony)

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley on flat glacial outwash terraces. Where the river has recently cut into these, erosion is common. Localized areas of high alkalinity are also found. Stones increase in size and abundance as the material deepens. The vegetation is grassland.

COMPONENT BIOPHYSICAL SUBUNITS

1AB.31
1AB1.31
1AB2.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE- high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 1AB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial - fluvial

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley on flat glacial outwash terraces. Where the river has recently cut into these, erosion is common. Localized areas of high alkalinity are also found. Stones increase in size and abundance as the material deepens.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

1AB.21
1AB2.21

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1ADB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - Flat

0 - 9%

PARENT MATERIAL

Glacial outwash

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam

SOIL GREAT GROUP

Dark Brown Chernozem

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit occurs on flat-lying glacial outwash material at the northern end of upper Hat Creek valley. A grassland vegetation association prevails.

COMPONENT BIOPHYSICAL SUBUNITS

1ADB.27

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 1ADB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam

SOIL GREAT GROUP

Dark Brown Chernozem

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

DESCRIPTION OF THE DYNAMICS

This unit occurs on flat-lying glacial outwash material at the northern end of upper Hat Creek valley. A grassland vegetation association prevails.

COMPONENT BIOPHYSICAL SUBUNITS

1ADB.21

PRESENT RESOURCE USE

Agriculture

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1AE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Imperfectly drained to well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - Pinegrass Association
Engelmann Spruce - Grouseberry - White Rhododendron Association
Engelmann Spruce - Grouseberry Association

DESCRIPTION OF THE DYNAMICS

This unit occurs in upland valley bottoms and is localized to the Pavilion Creek area. Remnants of kame terraces are also evident. Limitations result mainly from localized areas of impeded drainage.

COMPONENT BIOPHYSICAL SUBUNITS

1AE.3
1AE.4
1AE.2

PRESENT RESOURCE USE

Forestry/grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 4 grazing capability

FORESTRY- poor forest site production

WILDLIFE- Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 1AE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir Zone

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam
(moderately stony)

SOIL GREAT GROUP

Eutric Brunisol

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Pinegrass - Bunchgrass Assoc.
Douglas-fir - Bunchgrass Association
Sagebrush - Bluebunch Wheatgrass Assoc.
Kentucky Bluegrass/Riparian Complex

DESCRIPTION OF THE DYNAMICS

This unit occurs on coarse-textured glacial fluvial terraces at the north end of upper Hat Creek and along lower Hat Creek. The vegetation is generally characterized by either an open forest-grassland or grassland type vegetation pattern. The regeneration is slow because of the dry soil conditions.

COMPONENT BIOPHYSICAL SUBUNITS

1AE.7
1AE.3
1AE.10
1AE.19
2AE.27

PRESENT RESOURCE USE

Forestry and grazing

RESOURCE CAPABILITY

AGRICULTURE - medium - high agricultural capability

GRAZING

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability except for Unit 1AE.27 which has a high capability

BIOPHYSICAL UNIT 1AE/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - Flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs on coarse-textured glacial fluvial terraces at the north end of upper Hat Creek and along lower Hat Creek.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - sandy loam
(moderately stony)

SOIL GREAT GROUP

Eutric Brunisol

COMPONENT BIOPHYSICAL SUBUNITS

1AE.21

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1AGS/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - rolling

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit is found at the confluence of Blue Earth and Hat Creek and is associated with many wetlands found in the area. The vegetation consists of densely forested areas of lodgepole pine with an understory of pinegrass interspersed with numerous bog areas. Engelmann spruce and alder can be found bordering the many wet areas.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silty Clay

COMPONENT BIOPHYSICAL SUBUNITS

1AGS.7

SOIL GREAT GROUP

Gleysolic

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Poorly drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agriculture capability

GRAZING

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 1AGS/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - Flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs at the head of the Oregon Jack Creek valley in a very localized area. Much of this unit has been drained and used for hay production.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silty Clay

SOIL GREAT GROUP

Gleysolic

COMPONENT BIOPHYSICAL SUBUNITS

1AGS.21

PRESENT RESOURCE USE

Hay Pasture

SOIL DRAINAGE

Very poorly drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 2 grazing capability

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1ARL/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam

SOIL GREAT GROUP

Regosolic

SOIL DRAINAGE

Poorly drained

VEGETATION ASSOCIATIONS

Cultivated fields
Riparian Association

DESCRIPTION OF THE DYNAMICS

This unit is confined to upper Hat Creek where the Hat Creek and Oregon Jack roads meet. At present, the area has been drained and is under cultivation.

COMPONENT BIOPHYSICAL SUBUNITS

1ARL+3.21
1ARL1+3.13

PRESENT RESOURCE USE

Hay pasture

RESOURCE CAPABILITY

AGRICULTURE - medium - high agricultural capability

GRAZING- class 2 grazing capability

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium to high capability
Moose - high capability except for Unit 1ARL1+3.21 which has a low capability
Waterfowl - low to medium capability
Other - medium capability except for Unit 1ARL1+3.13 which has a high capability

BIOPHYSICAL UNIT 1BGS/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland
0 - 5%

PARENT MATERIAL

Alluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silty Clay

SOIL GREAT GROUP

Gleysol

SOIL DRAINAGE

Imperfectly to poorly drained

VEGETATION ASSOCIATIONS

Riparian Association
Cultivated Fields
Bunchgrass - Kentucky Bluegrass/Riparian Complex

DESCRIPTION OF THE DYNAMICS

This unit occurs in the upper Hat Creek valley along Hat Creek. Riparian vegetation dominates the vegetation pattern. Poor drainage causes a gleysolic soil formation.

COMPONENT BIOPHYSICAL SUBUNITS

1BGS1+3.13
1BGS1+3.21
1BGS1+3.28

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium - high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose -low capability except for unit 1BGS1+3.13 which has a high capability
Waterfowl - low to medium capability
Other - high capability

BIOPHYSICAL UNIT 1BRL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Alluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs along permanent stream courses where recent flooding has deposited post-glacial materials. The topography is generally flat with some areas exhibiting a gently rolling or undulating topography. High alkalinity and flooding are major limitations along with high floristic diversity.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - silt loam

SOIL GREAT GROUP

Regosols

COMPONENT BIOPHYSICAL SUBUNITS

1BRL1+3.10
1BRL1+3.27
1BRL1+3.29

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Imperfectly to poorly drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass/Riparian Complex
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Sagebrush - Bluebunch - Wheatgrass/ Riparian Complex

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil - low capability
Other - high capability

BIOPHYSICAL UNIT 1BRL/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - Flat
0 - 9%

PARENT MATERIAL

Alluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam

SOIL GREAT GROUP

Regosolic

SOIL DRAINAGE

Imperfectly to poorly drained

VEGETATION ASSOCIATIONS

Cultivated Fields
Riparian Association

DESCRIPTION OF THE DYNAMICS

This unit occurs along permanent stream courses where recent flooding has deposited post-glacial materials. The topography is generally flat with some areas exhibiting a gently rolling or undulating topography. High alkalinity and flooding are potential problems. The vegetation is riparian in the undisturbed state.

COMPONENT BIOPHYSICAL SUBUNITS

1BRL1+3.21
1BRL1+3.13

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - open range, nc forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability except for Unit 1BRL1+3.13 which has a high capability
Waterfowl - low capability - medium capability
Other - high capability - medium capability

BIOPHYSICAL UNIT 1CB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland

0 - 9%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit is found where colluvial material in the form of a fan spills over the bottom of a valley. This forms a relatively flat bottomland. This happens in a narrow land at the northern extension of Pavilion Lake. The vegetation is a grassland type. In addition, some areas are shallow colluvium over bedrock. In these areas, the Douglas-fir-Bunchgrass Association prevails.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam

SOIL GREAT GROUP

Brown

COMPONENT BIOPHYSICAL SUBUNITS

1CB.8
1CB.19
1CB.18

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Sagebrush - Bluebunch Wheatgrass Assoc.
Bunchgrass - Kentucky Bluegrass Assoc.

RESOURCE CAPABILITY

AGRICULTURE- high agricultural capability

GRAZING

FORESTRY- open range, no forest value - poor forest site production

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 1CB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam
(moderately stony)

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Riparian Association
Cultivated Fields

DESCRIPTION OF THE DYNAMICS

This unit is found where colluvial material in the form of a fan spills over the bottom of a valley. This forms a relatively flat bottomland. This happens in a narrow land at the northern extension of Pavilion Lake.

COMPONENT BIOPHYSICAL SUBUNITS

1CB.21
1CB.13

PRESENT RESOURCE USE

Grazing and agriculture

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium to high capability
Moose - low capability except for Unit 1CB.13 which has a high capability
Waterfowl - low capability
Other - medium capability except for Unit 1CB.13 which has a high capability

BIOPHYSICAL UNIT 1EB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Aeolian

DESCRIPTION OF THE DYNAMICS

This unit occurs on flat glacial outwash terraces in the Thompson River valley where windblown deposits have been laid down on top at depths up to 20 centimetres. The vegetation is mainly grassland due to the fine-textured surface soil.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

1EB.11
1EB.31
1EB1.31

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association
Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING - class 2 grazing capability

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 1EB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Aeolian

DESCRIPTION OF THE DYNAMICS

This unit occurs on flat glacial outwash terraces in the Thompson River valley where windblown deposits have been laid down on top at depths up to 20 centimetres. The vegetation is mainly grassland due to the fine-textured surface soil.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay.

COMPONENT BIOPHYSICAL SUBUNITS

1EB.21
1EB1.21

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1TBL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - silty clay

SOIL GREAT GROUP

Black Chernozems

SOIL DRAINAGE

Well drained - imperfectly drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit is in the Gillon Creek drainage on dissected glacial till materials. The vegetation is a grassland type. No limitations are present.

COMPONENT BIOPHYSICAL SUBUNITS

1TBL.17

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 1TBL/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - Flat

0 - 9%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is in the Gillon Creek drainage on dissected glacial till materials. The vegetation is a grassland type. No limitations are present.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

1TBL.21

SOIL GREAT GROUP

Black Chernozems

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1TGL/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Gillon Creek drainage on hummocky till with some areas of bedrock controlled topography.

LANDFORM

Plateau hummocky

0 - 9%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

1TGL.2
1TGL.3

TEXTURE

Silt loam (slightly stony)

SOIL GREAT GROUP

Gray Luvisols

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Pine-grass Association

GRAZING - class 2-5 grazing capability

FORESTRY - medium forest site production
- poor forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 1TGL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Plateau - hummocky

0 - 9%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Gillon Creek drainage on hummocky till with some areas of bedrock controlled topography.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres + (less than 2 metres)

COMPONENT BIOPHYSICAL SUBUNITS

1TGL.7

TEXTURE

Silt Loam

SOIL GREAT GROUP

Gray Luvisols

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2AB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomlands - rolling

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Kentucky Bluegrass/Riparian Complex

DESCRIPTION OF THE DYNAMICS

This unit occurs in a valley-wall terrace formation along lower Hat Creek.

COMPONENT BIOPHYSICAL SUBUNITS

2AB.8
2AB.27

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low to medium capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2AB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - dissected

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs on glacial outwash materials in the Thompson valley. These materials are usually dissected and slightly eroded, leading to a complex microtopography.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

2AB.31
2AB1.31

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well-drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2AB/5

BIOGEOCLIMATIC ZONE

Intrazonal

DESCRIPTION OF THE DYNAMICS

This unit is distributed in bottomlands near water courses where acequate irrigation water and high soil productivity are found.

LANDFORM

Bottomlands - sloping

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

2AB.21

TEXTURE

Silt Loam - silty clay

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE- high agricultural capability

GRAZING- class 4 grazing capability

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

VEGETATION ASSOCIATIONS

Cultivated Fields

BIOPHYSICAL UNIT 2ABL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomlands - rolling

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - silty clay

SOIL GREAT GROUP

Black Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit occurs in the upper valley areas at elevations greater than 1200 m. These areas are highly productive grassland areas if not overgrazed.

COMPONENT BIOPHYSICAL SUBUNITS

2ABL.17
2ABL1.17

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 2 grazing capability

FORESTRY- *open range, no forest value*

WILDLIFE- Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2ADB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomlands - rolling
10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam

SOIL GREAT GROUP

Dark Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass Association
Bunchgrass - Kentucky Bluegrass/Saline Depression Complex

DESCRIPTION OF THE DYNAMICS

This unit consists of a mixing of glacial-fluvial and water-worked glacial till deposits. The materials are relatively stable. This unit is found in broad, flat valleys.

COMPONENT BIOPHYSICAL SUBUNITS

2ADB.10
2ADB.7
2ADB.23

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil except for Unit 2ADB.23 which has a high capability
Other - low capability except for Unit 2ADB.23 which has a medium capability

BIOPHYSICAL UNIT 2AE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Bottomlard - rolling

10 - 29% slope

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs in upland valley bottoms to elevations of 1800 metres. This unit is confined to the southwestern corner of the study area.

DEPTH OF JNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam to loam

COMPONENT BIOPHYSICAL SUBUNITS

2AE.2
2AE.6

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Lupines Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 2AE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomlard - dissected and hummocky
10 - 29% complex

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs in the bottomlands of small valleys on rolling glacial-fluvial deposits. It contains a variety of vegetation associations from open range to forest. The occurrence of open range areas on this relatively coarse-textured parent material is the result of an Aeolian capping in some areas.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam

COMPONENT BIOPHYSICAL SUBUNITS

2AE.7
2AE1.7
2AE.8
2AE.10
2AE.18
2AE.17

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Bunchgrass - Kentucky Bluegrass Association
Kentucky Bluegrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 4 grazing capability

FORESTRY - medium forest site production - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 2AE/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - dissected

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - loam

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit occurs on glacial outwash terraces along the Thompson River and Bonaparte River.

COMPONENT BIOPHYSICAL SUBUNITS

2AE.11

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 4 grazing capability

FORESTRY- poor forest site production

WILDLIFE - Deer - *medium capability*
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2AE/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomlands - dissected

10 - 29%

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This is a very limited unit occurring only along a few localized stream courses mainly in Hat Creek and Oregon Jack valleys.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt Loam - sandy loam

COMPONENT BIOPHYSICAL SUBUNITS

2AE.14

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry and improved pasture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Horsetail Association

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- poor forest site production

WILDLIFE- Deer - low capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2CB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Sloping lands

10 - 29%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit is found on lower slope areas near the valley bottoms where a mixture of grassland and open parkland forests exist. It is commonly found in the lower Hat Creek valley.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam

COMPONENT BIOPHYSICAL SUBUNITS

2CB.8
2CB.18

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Bunchgrass - Kentucky Bluegrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - nil
Other - medium capability - low capability

BIOPHYSICAL UNIT 2CB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Sloping lands

10 - 29%

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit occurs on sloping lands within the Bonaparte-Thompson River valleys on the lower slope-bottomland areas. High alkalinity occurs in some locations. Revegetation is slow because of the dry climate.

COMPONENT BIOPHYSICAL SUBUNITS

2CB.31
2CB1.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - *open range, no forest value*

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2CB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Sloping land

10 - 29%

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

DESCRIPTION OF THE DYNAMICS

This unit occurs on highly alkaline parent material that is presently under cultivation. Its distribution lies mainly in the Bonaparte-Thompson River valleys. Erosion appears to be no problem.

COMPONENT BIOPHYSICAL SUBUNITS

2CB1.21

PRESENT RESOURCE USE

Agriculture

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2CD/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Sloping land - rolling

10 - 29%

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam (stony)

SOIL GREAT GROUP

Dystric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Asscciation
Engelmann Spruce - Grouseberry - Pinegrass Association
Engelmann Spruce - Grouseberry - Lupines Association
Highland Grassland Association

DESCRIPTION OF THE DYNAMICS

This unit occurs in the high mountain areas above 1800 metres. The vegetation is characterized by a dense forest interspersed with the occasional grassland area.

COMPONENT BIOPHYSICAL SUBUNITS

2CD.2
2CD.3
2CD.6
2CD.16

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 5 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 2CDB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Sloping land - midslope

10 - 29%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit is found on mid-slopes to areas of rolling topography in elevations of 900 to 1280 metres. It supports a mixed open savanna forest and grassland vegetation.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Loam

COMPONENT BIOPHYSICAL SUBUNITS

2CDB.8
2CDB.18

SOIL GREAT GROUP

Dark Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Bunchgrass - Kentucky Bluegrass
Douglas-fir - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2CDB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Sloping land - rolling

10 - 29%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Bonaparte-Thompson River valleys on sloping topography near the valley bottoms. It supports mostly a grassland association with minor inclusions of an open savanna forest. The parent material is fairly stable.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Loam

SOIL GREAT GROUP

Dark Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

2CDB.11

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- *non-productive forest site* - open range, no forest value

WILDLIFE- Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2CE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Sloping lands

10 - 29%

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam (stony)

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well draired

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Pinegrass Association
Engelmann Spruce - Grouseberry - White Rhododendron Association
Engelmann Spruce - Grouseberry - Lupines Association

DESCRIPTION OF THE DYNAMICS

This unit is found at elevations above 1450 metres in the steep, lower slopes of drainage courses and on steep, rocky, uniform slopes around the major peaks of the area. It occurs mainly in the clear Range and Pavilion Mountain area.

COMPONENT BIOPHYSICAL SUBUNITS

2CE.2
2CE2.2
2CE.3
2CE1.4
2CE2.6

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY:

AGRICULTURE -

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2CE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Sloping lands

10 - 29%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit is found on dry southern exposures to the north of upper Hat Creek valley. High alkalinity and erosion are limitations associated with this unit.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam
(stony)

COMPONENT BIOPHYSICAL SUBUNITS

2CE.7
2CE1.7
2CE2.7
2CE.10
2CE1.10

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass - Pinegrass Assoc.

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability to medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2CE/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Sloping lands

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Thompson River valley under mainly open savanna forests with minor inclusions of grassland associations. Many angular rocks are found in the soil matrix. Colluvial material has moved down and fanned out to form moderately sloping fan deposits. Tree regeneration is slow because of the dry climate.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam (stony)

SOIL GREAT GROUP

Eutric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

2CE.11
2CE.31

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Rapidly drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association
Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability to medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2CE/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Sloping land - lower slope

10 - 29%

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit is found on the lower slopes in the major valleys where colluvial material has moved down and fanned out to form a moderately sloping fan deposit. Irrigated pasture is the major use.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam (moderately stony)

COMPONENT BIOPHYSICAL SUBUNITS

2CE.21

SOIL GREAT GROUP

Eutric Brunisol

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2EB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - hummocky and ridged

10 - 29%

PARENT MATERIAL

Aeolian

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Brown Cherrozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley below Ashcroft on Aeolian deposits up to 30 cm thick. The Aeolian deposits are underlain by glacial till. This area may be prone to erosion when cleared of vegetation.

COMPONENT BIOPHYSICAL SUBUNITS

2EB.31
2EB1.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - high to medium high agricultural capability

GRAZING - class 3 to 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2EB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland - slightly sloping

10 - 29%

PARENT MATERIAL

Aeolian

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley below Ashcroft on Aeolian deposits up to 30 cm thick. The Aeolian deposits are underlain by glacial till. This area may be prone to erosion when cleared of vegetation.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

2EB.21
2EB1.21

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING -

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2EDB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - hummocky

10 - 29%

PARENT MATERIAL

Aeolian

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Dark Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley below Ashcroft on Aeolian deposits up to 30 cm thick. The Aeolian deposits are underlain by glacial till. This area may be prone to erosion when cleared of vegetation.

COMPONENT BIOPHYSICAL SUBUNITS

2EDB.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2EDB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomlanc - hummocky and sometimes drumlinized
10 - 29% complex

PARENT MATERIAL

Aeolian/Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley below Ashcroft on Aeolian deposits up to 30 cm thick. The Aeolian deposits are underlain by glacial till. This area may be prone to erosion when cleared of vegetation.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Dark Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

2EDB.21

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2TB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - drumlinized

10 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is widespread in the Thompson River valley on drumlinized till and shallow till over rock topography. The soils are mainly neutral in reaction. The vegetation is grassland with some inclusions of open savanna forests on shallow till over rock areas.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres + (less than 2 metres)

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

2TB.11
2TB.31
2TB1.31

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association
Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 2-3 grazing capability

FORESTRY - *non-productive forest site* - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2TB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland

0 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is widespread in the Thompson River valley on drumlinized till and shallow till over rock topography. The soils are mainly neutral in reaction. The vegetation is grassland with some inclusions of open savanna forests on shallow till over rock areas.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

2TB.21

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Agricultural

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING

FORESTRY - *open range, no forest value*

WILDLIFE - Deer - *medium to high capability*
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2TBL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - hummocky

10 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the upland valley areas. The topography is hummocky and ridged. The parent materials are highly alkaline, presenting problems in revegetation. The present vegetation is mainly grassland with some forested areas present.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay (slightly stony)

SOIL GREAT GROUP

Black Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

2TBL.8	2TBL.10
2TBL1.8	2TBL1.7
2TBL.17	2TBL2.17
2TBL1.17	2TBL.18
2TBL1.18	
2TBL1.19	
2TBL1.20	
2TBL1.23	

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained with some poorly drained depressions

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Bunchgrass - Kentucky Bluegrass Association
Saline Depression Association
Kentucky Bluegrass Association
Sagebrush - Bluebunch Wheatgrass Assoc.
Bunchgrass - Kentucky Bluegrass/Saline Depression Complex
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 2-3 grazing capability

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium to medium-high capability except for Unit 2TBL1.19 which has a high capability
Moose - low capability
Waterfowl - nil except for Unit 2TBL1.23 and 2TBL1.20 which have a high capability
Other - low to medium capability

BIOPHYSICAL UNIT 2TBL/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the upland valley areas. The topography is hummocky and ridged. The parent materials are highly alkaline, presenting problems in revegetation. The present vegetation is mainly grassland with some forested areas present.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

2TBL1.21

SOIL GREAT GROUP

Black Chernozems

PRESENT RESOURCE USE

Improved pasture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2TDB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Sloping land - dissected and rolling

10 - 29%

PARENT MATERIAL

Glacial till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay
(slightly stony)

SOIL GREAT GROUP

Dark Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass Association
Douglas-fir - Bunchgrass Association
Sagebrush - Bluebunch Wheatgrass Association
Bunchgrass - Kentucky Bluegrass/Saline Depressional Complex
Bunchgrass - Kentucky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit is found on rolling, dissected glacial till on mid to lower slopes. It supports a grassland association. This unit dominates the grasslands of the Hat Creek valley. Generally, many wet depressions are found scattered throughout the area covered by this unit.

COMPONENT BIOPHYSICAL SUBUNITS

2TDB.17
2TDB1.8
2TDB1.18
2TDB1.19
2TDB1.23
2TDB.19

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium agricultural capability

GRAZING - class 2 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium-high capability except for Units 2TDB1.19 and 2TDB.19 which have high capability
Moose - low capability
Waterfowl - nil except for Unit 2TDB1.23 which has a high capability
Other - low to medium capability

BIOPHYSICAL UNIT 2TDB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Sloping land - bottomland

10 - 29%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Dark Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit is found on the lower slopes in the Thompson River valley on drumlinized glacial till. The soils are moderately alkaline and moderately saline.

COMPONENT BIOPHYSICAL SUBUNITS

2TDB.31
2TDB2.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 2TDB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Sloping land - rolling

10 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is found on rolling, dissected glacial till on mid to lower slopes. It supports a grassland association. This unit dominates the grasslands of the Hat Creek valley. Generally, many wet depressions are found scattered throughout the area covered by this unit.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

2TDB1.21
2TDB.21

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Dark Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 2TE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

DESCRIPTION OF THE DYNAMICS

This unit is found on relatively flat lying plateaus with a rolling landform.

LANDFORM

Plateau - hummocky

10 - 29%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

2TE.3

TEXTURE

Sandy loam - loam

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - Pinegrass Association

GRAZING - class 2 grazing capability

FORESTRY - medium forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2TE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Sloping land - hummocky and drumlinized

10 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit occurs on bedrock controlled landscape at elevations of 600 to 1200 m. It is found on lower slope areas as well as upper slopes just below a relatively flat plateau. The vegetation is dominated by forest but some grasslands of small size are found. High alkalinity is a major problem.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Silt loam

SOIL GREAT GROUP

Eutric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

2TE.7
2TE1.7
2TE.10
2TE1.10
2TE.17
2TE.18
2TE.19
2TE1.10
2TE1.19

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass Association
Kentucky Bluegrass Association
Bunchgrass - Kentucky Bluegrass Association
Sagebrush - Bluebunch - Wheatgrass Assoc.

RESOURCE CAPABILITY

AGRICULTURE - medium to medium-high agricultural capability

GRAZING - class 2-4 grazing capability

FORESTRY - open range, no forest value - poor forest site production

WILDLIFE - Deer - medium-medium-high capability except for Unit 2TE.19 which has a high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2TG/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir Zone

LANDFORM

Sloping lands - hummocky

10 - 29%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Silt Loam - Silty Clay

SOIL GREAT GROUP

Dark Gray Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Kentucky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit occurs on shallow glacial till less than 2 metres in thickness. Limestone bedrock generally creates the microtopography of this bedrock-controlled unit. At present, much of this unit is vegetated by either grassland or aspen stands.

COMPONENT BIOPHYSICAL SUBUNITS

2TG.7
2TG.17

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2TGL/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine Fir

LANDFORM

Plateau - hummocky to drumlinized

1- - 29%

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - loam (very stony land)

SOIL GREAT GROUP

Gray luvisols

SOIL DRAINAGE

Well to poorly drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - White Rhododendron Association
Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Pinegrass Association
Engelmann Spruce - Grouseberry - Lupines Association
Highland Grassland Association

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the study area on drumlinized to hummocky till at elevations 1200 to 1900 m. Poor drainage and associated wetland areas are common. In addition, many areas of shallow bedrock controlled topography are present.

COMPONENT BIOPHYSICAL SUBUNITS

2TGL.2
2TGL1.2
2TGL.3
2TGL1.3
2TGL.4
2TGL1.4
2TGL.6
2TGL.16
2TGL1.16

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 2-5 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 2TGL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomlands - hummocky on lower slopes

10 - 29%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the study area at elevations of 900 to 1400 m. The topography is generally hummocky with many wet depressions. The vegetation is forest except for some minor inclusions of grassland. Erosion problems are minor in total area.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay
(slightly stony)

SOIL GREAT GROUP

Gray Luvisols

COMPONENT BIOPHYSICAL SUBUNITS

2TGL.7
2TGL1.7
2TGL1+2.7
2TGL.8
2TGL.10

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3AB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - steeply terraced and dissected

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs on terraced glacial outwash terraces that have been dissected by surface runoff. Many steep-sided gullies traverse the area. The vegetation is a mixture of grassland and open parklike forests.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - silt loam (stony)

COMPONENT BIOPHYSICAL SUBUNITS

3AB.11
3AB.31

SOIL GREAT GROUP

Brown chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association
Ponderosa Pine - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING - class 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 3AB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland

30%+

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs on terraced glacial outwash terraces that have been dissected by surface runoff. Many steep-sided gullies traverse the area. The vegetation is a mixture of grassland and open parklike forests.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam - silt loam (stony)

COMPONENT BIOPHYSICAL SUBUNITS

3AB.21

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Improved pasture and agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - low capability
Other - low capability

BIOPHYSICAL UNIT 3ABL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Elevated Bottomland - very hummocky
30%+ - complex

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit only occurs in the extreme southern end of Hat Creek valley on hummocky glacial-fluvial deposits. Some colluvial material is present from the adjacent steep slopes.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam
(very stony)

SOIL GREAT GROUP

Black Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

3ABL.23

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained with localized poorly drained depressions

VEGETATION ASSOCIATIONS

Bunchgrass - Kentucky Bluegrass/Saline Depression Complex

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 2 grazing capability

FORESTRY- open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - high capability
Other - medium capability

BIOPHYSICAL UNIT 3AE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine Fir

LANDFORM

Steepland - terraced and hummocky

30%+

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit is found in upland valleys where glacial-fluvial deposits have been deposited in a terrace formation. The topography is steep and hummocky.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam

COMPONENT BIOPHYSICAL SUBUNITS

3AE.2
3AE.3

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Pinegrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 4 grazing capability

FORESTRY- medium forest site production
- poor forest site production

WILDLIFE- Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3AE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland - terraced

30%+

PARENT MATERIAL

Glacial-Fluvial

DESCRIPTION OF THE DYNAMICS

This unit occurs on glacial outwash with some areas of water-worked till. The topography is composed of flat lying terraces with steep faces between terraces. The presence of fluvial fans is also notable. The erosion potential on the steep slopes is the major limitation.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Eutric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

3AE.7
3AE.8
3AE.10
3AE2.24
3AE2.26

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass - Pinegrass Association
Douglas-fir - Bunchgrass Association
Douglas-fir - Spirea - Bearberry/
Douglas-fir - Bunchgrass Complex

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 4 grazing capability

FORESTRY- poor forest site production

WILDLIFE- Deer - medium to high capability
Moose - low capability
Waterfowl - *nil*
Other - low capability - medium capability

BIOPHYSICAL UNIT 3AE/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Bonaparte and Thompson River valleys on steeply terraced and dissected glacial-fluvial deposits.

LANDFORM

Steepland - terraced

30%+

PARENT MATERIAL

Glacial-fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

3AE.11

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Assocation

GRAZING- class 5 grazing capability

FORESTRY- non-productive forest site

WILDLIFE- Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 3AGL/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

DESCRIPTION OF THE DYNAMICS

This unit is found only in the Blue Earth Lake area on hummocky, kame terraces supporting an Engelmann Spruce - Grouseberry - Pinegrass Association

LANDFORM

Bottomland - hummocky and kame

30%+

PARENT MATERIAL

Glacial-Fluvial

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

3AGL.3

TEXTURE

Silt loam
(very story)

SOIL GREAT GROUP

Gray Luvisols

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Imperfectly drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - Pinegrass Association

GRAZING- class 2 grazing capability

FORESTRY- medium forest site production

WILDLIFE- Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Steepland - Fans

30%+

PARENT MATERIAL

Colluvium with eroding glacial-fluvial terraces present

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam

SOIL GREAT GROUP

Brown Chernozems

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the Thompson River valley. It occurs along the Thompson River where present and potential mass movement problems exist. Removal of any vegetation could be detrimental.

COMPONENT BIOPHYSICAL SUBUNITS

3CB.31
3CB1.31
3CB2.31

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE - medium-high to high agricultural capability

GRAZING - class 3 to 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CD/1

BIOGEOCLIMATIC ZONE

Alpine Turdra

LANDFORM

Steepland - Mountain Ridge

30%+

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs on the highest mountain tops within the study area. The soils contain greater than 40% angular rock. The vegetation is very sensitive to the high elevations.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam
(extremely stony)

SOIL GREAT GROUP

Dystric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

3CD.30

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Mountain Avens - Sedge/Highland Grassland Complex

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 5 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CD/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Steepland

30%+

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam
(stony)

SOIL GREAT GROUP

Dystric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Lupines Association
Engelmann Spruce - Willow - Red Heather Parkland Association
Engelmann Spruce - Grouseberry - Pinegrass Association
Engelmann Spruce - Grouseberry - White Rhododendron Association
Highland Grassland Association

DESCRIPTION OF THE DYNAMICS

This unit is found on extremely sloping lands with a shallow colluvial parent material. Erosion and moss movement are major problems, especially if the vegetation is removed. This is a widespread unit in the Clear Range.

COMPONENT BIOPHYSICAL SUBUNITS

3CD.2
3CD2.2
3CD.3
3CD2.4
3CD.5
3CD.6
3CD2.6
3CD.16

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 5 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CD/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland

30%+

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs on extremely sloping land with a shallow colluvial parent material. Erosion and moss movement are major problems especially after a disturbance.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam
(stony)

SOIL GREAT GROUP

Dystric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

3CD.7
3CD2.7
3CD.8
3CD.10
3CD.25

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass Association
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass/Douglas-fir - Bunchgrass - Pinegrass Complex

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4-5 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 3CDB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Steepland - straight slopes

30%+

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Thompson River valley in the extreme southeast portion of the study area, on very steep, sloping land with straight contours. Grassland is the vegetation type.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam to loam

COMPONENT BIOPHYSICAL SUBUNITS

3CDB.20
3CDB.31

SOIL GREAT GROUP

Dark Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association
Saline Depression Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CE/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine Fir

LANDFORM

Steepland

30%+

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam to loam
(very stony)

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well drained to rapidly drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - Lupines Association
Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Pinegrass Association
Highland Grassland Association
Engelmann Spruce - Willow - Red Heather Parkland Association
Engelmann Spruce - Grouseberry - White Rhododendron Association

DESCRIPTION OF THE DYNAMICS

This unit occurs as does unit 3CE/3 except at higher elevations.

COMPONENT BIOPHYSICAL SUBUNITS

3CE.2	3CE2.5
3CE1.2	3CE.6
3CE2.2	3CE2.6
3CE.3	3CE2.16
3CE1.3	3CE.16
3CE2.3	
3CE2.4	
3CE1.4	

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 4-5 grazing capability

FORESTRY- poor forest site production - medium forest site production

WILDLIFE- Deer - medium capability
Moose - medium to low capability except for Unit 3CE1.5 which has a medium-high capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland

30%+

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam
(very stony)

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Spirea - Bearberry/Douglas-fir - Bunchgrass - Pinegrass Complex
Douglas-fir - Pinegrass/Douglas-fir - Bunchgrass - Pinegrass Complex
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Spirea - Bearberry Association
Douglas-fir - Spirea - Bearberry/Douglas-fir-Bunchgrass Complex
Douglas-fir - Bunchgrass Association
Bunchgrass - Kentucky Bluegrass Association
Kentuky Bluegrass Association

DESCRIPTION OF THE DYNAMICS

This unit is dominant on steep, dry mountain slopes throughout the study area in the Interior Douglas-fir Zone. Both a high alkalinity and erosion contribute to this unit's constraints.

COMPONENT BIOPHYSICAL SUBUNITS

3CE.7	3CE.17
3CE1.7	3CE.18
3CE2.7	3CE.24
3CE2.8	3CE2.24
3CE.9	3CE2.25
3CE.10	3CE2.26
3CE1.10	3CE1+2.26
3CE2.10	3CE1.17
3CE1+2.10	3CE2.17

PRESENT RESOURCE USE

Forestry/grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production - medium forest site production

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CE/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Steepland

30%+

PARENT MATERIAL

Colluvium

DESCRIPTION OF THE DYNAMICS

This unit occurs on very steep rocky colluvial slopes similar to Units 3CE/2 and 3CE/3. Potential erosion problems are present.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam
(very story)

SOIL GREAT GROUP

Eutric Brunisols

COMPONENT BIOPHYSICAL SUBUNITS

3CE.11
3CE2.11

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Rapidly drained

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - non-productive forest site

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 3CE/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Steepland - lower slope

30%+ - simple

PARENT MATERIAL

Colluvium

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Sandy loam
(very stony)

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Horsetail Association

DESCRIPTION OF THE DYNAMICS

This unit is limited to lower slopes and narrow valley bottoms where seepage water is present.

COMPONENT BIOPHYSICAL SUBUNITS

3CE.14

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - low capability
Moose - low capability
Waterfowl - medium capability except for Unit 3CE.14 which has a nil capability
Other - low capability except for Unit 3CE.14 which has a high capability

BIOPHYSICAL UNIT 3CG/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir

LANDFORM

Steepland

30%+- simple

PARENT MATERIAL

Colluvium/Rock

DESCRIPTION OF THE DYNAMICS

This unit occurs on very steep, dry lower slopes where soil movement is common. The substratum is mainly broken rock (talus) with a shallow medium textured soil deposited on the surface. Numerous rock exposures are present, and the exposure is generally southerly.

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam

COMPONENT BIOPHYSICAL SUBUNITS

3CG1+2.3

SOIL GREAT GROUP

Dark Gray Chernozems

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Rapidly drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry - Pinegrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY- poor forest site production

WILDLIFE- Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CG/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland

30%+ - simple

PARENT MATERIAL

Colluvium/Rock

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam
(very stony)

SOIL GREAT GROUP

Dark Gray Chernozems

SOIL DRAINAGE

Rapidly drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass Association
Kentucky Bluegrass Association
Douglas-fir - Spirea - Bearberry - Douglas-fir - Bunchgrass - Pinegrass Complex
Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Spirea - Bearberry/Douglas-fir-Bunchgrass Complex

DESCRIPTION OF THE DYNAMICS

This unit occurs on very steep, dry lower slopes where soil movement is common. The substratum is mainly broken rock (talus) with a shallow medium textured soil deposited on the surface. Numerous rock exposures are present, and the exposure is generally southerly.

COMPONENT BIOPHYSICAL SUBUNITS

3CG1+2.7
3CG1+2.8
3CG1+2.10
3CG1+2.17
3CG1+2.24
3CG1+2.26

PRESENT RESOURCE USE

Forestry/grazing

RESOURCE CAPABILITY

AGRICULTURE- *medium-high agricultural capability*

GRAZING- *class 3 grazing capability*

FORESTRY- poor forest site production - non-productive forest site

WILDLIFE- Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability except for Unit 3CG1+2.8 which has medium capability

BIOPHYSICAL UNIT 3CGL/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine fir Zone

LANDFORM

Steeplard - rolling and hummocky

30%+

PARENT MATERIAL

Glacial till mixed with angular colluvial material

DESCRIPTION OF THE DYNAMICS

This unit occurs on rolling and hummocky plateau areas, mainly west of upper Hat Creek. Its occurrence is of limited extent within the local study area. The unit is densely forested with lodgepole pine, with some inclusions of Engelmann spruce.

DEPTH TO UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Silt loam

SOIL GREAT GROUP

Gleysols

COMPONENT BIOPHYSICAL SUBUNITS

3CGL.2

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - medium capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3CGL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir Zone

LANDFORM

Steepland - rolling and hummocky

30%+

PARENT MATERIAL

Glacial till mixed with angular colluvial material

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Silt loam

SOIL GREAT GROUP

Grey Luvisol

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association

DESCRIPTION OF THE DYNAMICS

This unit has identical physical characteristics to Unit 3CGL/2. The vegetation is similar except for the abundance of pinegrass in the understory and lack of grouseberry. This increases Unit 3CGL/3's importance for livestock grazing.

COMPONENT BIOPHYSICAL SUBUNITS

3CGL.7

PRESENT RESOURCE USE

Forestry and Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3EB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - hummocky and dissected sometimes drumlinized
30%+

PARENT MATERIAL

Aeolian
(overlying glacial till or glacial-fluvial materials)

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley. Generally the Aeolian capping is approximately 15 cm in thickness. The underlying parent material (glacial-fluvial and glacial till) controls the landscape configuration.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam

COMPONENT BIOPHYSICAL SUBUNITS

3EB.31

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - high agricultural capability

GRAZING- class 3 grazing capability

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3EB/5

BIOGEOCLIMATIC ZONE

Intrazonal

LANDFORM

Bottomland

30%+

PARENT MATERIAL

Aeolian
(overlying either glacial till or glacial-fluvial materials)

DESCRIPTION OF THE DYNAMICS

This unit is found in the Thompson River valley. Generally the Aeolian capping is approximately 15 cm in thickness. The underlying parent material (glacial-fluvial and glacial till) controls the landscape configuration.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

3EB.21
3EB1.21
3EB1.31

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Agriculture

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Cultivated Fields
Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland - hummocky

30%+ - complex

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit occurs on steep complex slopes in the Bonaparte River valley where an open tree canopy exists. It is generally mixed with gray luvisolic soils that occur in the moisture depressions. This unit is of limited extent within the study area.

DEPTH OF UNCONSOLIDATED MATERIALS

Variable

TEXTURE

Silt loam

SOIL GREAT GROUP

Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

3TB.7
3TB.10

PRESENT RESOURCE USE

Forestry/Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Bunchgrass - Pinegrass Assoc.
Douglas-fir - Pinegrass Assoc.

RESOURCE CAPABILITY

AGRICULTURE- medium-high agricultural capability

GRAZING

FORESTRY- poor forest site production

WILDLIFE- Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Steepland - dissected

30%+ - simple

PARENT MATERIAL

Glacial till

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Thompson River valley on glacial till with localized areas of till over rock. The vegetation is grassland.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres - some areas less than 2 metres

TEXTURE

Silt loam to silty clay (moderately stony)

COMPONENT BIOPHYSICAL SUBUNITS

3TB.31
3TB1.31

SOIL GREAT GROUP

Brown Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 4 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TBL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Bottomland - hummocky and channelled
30%+ - complex

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

? metres +

TEXTURE

Silt loam to silty clay

SOIL GREAT GROUP

Black Chernozems

SOIL DRAINAGE

Well drained with many poorly drained depressions

VEGETATION ASSOCIATIONS

Bunchgrass - Kentucky Bluegrass Association
Bunchgrass - Kentucky Bluegrass/Saline Depression Complex
Kentucky Bluegrass Association
Douglas-fir - Bunchgrass - Pinegrass Assoc.

DESCRIPTION OF THE DYNAMICS

This unit is found in the Hat Creek valley and covers a major portion of the grassland areas of the Hat Creek drainage. The soils within this unit are highly alkaline and could cause revegetation problems. The topography is generally very hummocky and channelled.

COMPONENT BIOPHYSICAL SUBUNITS

3TBL.10
3TBL.17
3TBL1.17
3TBL1.18
3TBL1.23

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 2 grazing capability

FORESTRY- open range, no forest value

WILDLIFE- Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil, except for Unit 3TBL1.23 which has a high capability
Other - low capability except for Unit 3TBL1.23 which has a medium capability.

BIOPHYSICAL UNIT 3TDB/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir Zone

LANDFORM

Bottomland - hummocky

30%+

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit has a limited occurrence in the upper Hat Creek valley on very hummocky bottomlands supporting a grassland vegetation type. An abundance of moist depressions occur that support the saline depression vegetation association on calcareous black chernozems.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

COMPONENT BIOPHYSICAL SUBUNITS

3TDB.23
3TDB.17

SOIL GREAT GROUP

Dark Brown Chernozems/Black Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Bunchgrass - Kentucky Bluegrass/Saline Depression Complex
Kentucky Bluegrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium-high agricultural capability

GRAZING

FORESTRY- open range, no forest value

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - high capability
Other - medium capability

BIOPHYSICAL UNIT 3TDB/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

LANDFORM

Bottomland - dissected

30%+ - simple

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Thompson River valley on fairly steep slopes with straight contours on the lower slopes of the valley. Some areas of drumlinized topography are also present.

With the grassland cover and relatively steep slopes, erosion is a constraint, especially if the vegetative cover is removed.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - silty clay

SOIL GREAT GROUP

Dark Brown Chernozems

COMPONENT BIOPHYSICAL SUBUNITS

3TDB2.31

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Big Sagebrush - Bunchgrass Association

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium to high capability
Moose - nil
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland - dissected and sometimes hummocky
30%+ - simple

PARENT MATERIAL

Glacial till - some colluvial material is usually present

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres + (some areas less than 2 metres)

TEXTURE

Silt loam
(moderately stony)

SOIL GREAT GROUP

Eutric Brunisols

SOIL DRAINAGE

Well drained

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Douglas-fir - Bunchgrass - Pinegrass Association
Douglas-fir - Bunchgrass Association
Kentucky Bluegrass Association
Kentucky Bluegrass/Riparian Complex

DESCRIPTION OF THE DYNAMICS

This unit occurs in the Interior Douglas-fir Zone on glacial till under forest and forest-grassland conditions. The topography is generally simple but dissected with some hummocky areas.

Both erosion and high alkalinity are associated with this unit.

COMPONENT BIOPHYSICAL SUBUNITS

3TE.7
3TE1.7
3TE2.8
3TE.10
3TE.17
3TE.27
3TE1.10
3TE1.17

PRESENT RESOURCE USE

Forestry/Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production - non-productive forest site

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability - medium capability

BIOPHYSICAL UNIT 3TE/4

BIOGEOCLIMATIC ZONE

Ponderosa Pine - Bunchgrass

DESCRIPTION OF THE DYNAMICS

This unit occurs on topography similar to Unit 3TE/3.

LANDFORM

Steepland

30% - simple

PARENT MATERIAL

Glacial Till - with some colluvial material present

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres + (with areas less than 2 metres)

COMPONENT BIOPHYSICAL SUBUNITS

3TE.11

TEXTURE

Silt loam

SOIL GREAT GROUP

Eutric Brunisols

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Ponderosa Pine - Bunchgrass Association

GRAZING - class 3 grazing capability

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - medium capability

BIOPHYSICAL UNIT 3TGL/2

BIOGEOCLIMATIC ZONE

Engelmann Spruce - Subalpine Fir

LANDFORM

Steepland - upland rolling plateau

30%+ - complex

PARENT MATERIAL

Glacial Till mixed with Colluvial material

DEPTH OF UNCONSOLIDATED MATERIALS

Less than 2 metres

TEXTURE

Sandy loam - loam
(very stony)

SOIL GREAT GROUP

Gray Luvisols

SOIL DRAINAGE

Well drained with localized areas of poorly drained soil

VEGETATION ASSOCIATIONS

Engelmann Spruce - Grouseberry Association
Engelmann Spruce - Grouseberry - Lupines Association
Engelmann Spruce - Willow - Red Heather Parkland Association
Engelmann Spruce - Grouseberry - Pinegrass Association
Highland Grassland Association
Engelmann Spruce - Grouseberry - White Rhododendron Association

DESCRIPTION OF THE DYNAMICS

This unit occurs throughout the study area on upland plateau areas with a complex topography.

COMPONENT BIOPHYSICAL SUBUNITS

3TGL.2	3TGL1.16
3TGL1.2	3TGL.4
3TGL.3	3TGL1.4
3TGL.6	3TGL.5
3TGL1.5	
3TGL1.6	
3TGL.16	

PRESENT RESOURCE USE

Forestry

RESOURCE CAPABILITY

AGRICULTURE

GRAZING- class 3-5 grazing capability

FORESTRY- Poor forest site production - medium forest site production

WILDLIFE- Deer - medium capability
Moose - variable, possesses a low to medium-high capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TGL/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir

LANDFORM

Steepland - strongly rolling (hummocky)

30%+

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam to silty clay

SOIL GREAT GROUP

Gray Luvisols

SOIL DRAINAGE

Well drained - localized areas of impeded drainage

VEGETATION ASSOCIATIONS

Douglas-fir - Pinegrass Association
Kentucky Bluegrass Association
Douglas-fir - Bunchgrass - Pinegrass Association
Douglas-fir - Spirea - Bearberry/Douglas-fir - Bunchgrass Complex
Douglas-fir - Spirea - Bearberry - Douglas-fir - Bunchgrass - Pinegrass Complex

DESCRIPTION OF THE DYNAMICS

This unit is widespread throughout the study area, especially in the Hat Creek valley on steeply hummocky topography. Some soils show high alkalinity. The vegetation is mostly forest with some inclusions of grasslands.

COMPONENT BIOPHYSICAL SUBUNITS

3TGL.7
3TGL.10
3TGL.17
3TGL.26
3TGL.24

PRESENT RESOURCE USE

Grazing

RESOURCE CAPABILITY

AGRICULTURE

GRAZING - class 2-5 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - medium capability - medium to high capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT 3TGL/5

BIOGEOCLIMATIC ZONE

Intrazonal

DESCRIPTION OF THE DYNAMICS

This unit occurs along stream courses where cold air drainage causes Engelmann Spruce to move down in elevation along deeply incised stream courses. The overstory is very dense, allowing only horsetail and moss species to exist under the low light conditions.

LANDFORM

Steepland - dissected

30%+

PARENT MATERIAL

Glacial Till

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

COMPONENT BIOPHYSICAL SUBUNITS

3TGL.14

TEXTURE

Silt loam - sandy loam

SOIL GREAT GROUP

Gray Luvisol

PRESENT RESOURCE USE

Forestry

SOIL DRAINAGE

Well drained

RESOURCE CAPABILITY

AGRICULTURE

VEGETATION ASSOCIATIONS

Engelmann Spruce - Horsetail Association

GRAZING - class 3 grazing capability

FORESTRY - poor forest site production

WILDLIFE - Deer - low capability
Moose - low capability
Waterfowl - nil
Other - low capability

BIOPHYSICAL UNIT W

BIOGEOCLIMATIC ZONE
Intrazonal

LANDFORM
Bottomlands - flat
0 - 9%

PARENT MATERIAL
Organic deposits

DEPTH OF UNCONSOLIDATED MATERIALS
Variable - less than 1 m to greater than 2 m

TEXTURE
-

SOIL GREAT GROUP
Organic to Gleysolic

SOIL DRAINAGE
Poorly drained

VEGETATION ASSOCIATIONS
Willow - Sedge Bog Association

DESCRIPTION OF THE DYNAMICS
This unit has a scattered occurrence throughout the local study area in poorly drained depressions where bedrock or impervious basal till restricts drainage. The resultant high water table causes the formation of a willow - sedge dominated vegetation association.

COMPONENT BIOPHYSICAL SUBUNITS
W

PRESENT RESOURCE USE
Grazing to some extent

RESOURCE CAPABILITY

AGRICULTURE - nil

GRAZING - medium capability

FORESTRY - nil

WILDLIFE - Deer - medium capability
Moose - high capability
Waterfowl - low capability
Other - medium capability

BIOPHYSICAL UNIT 1TE/3

BIOGEOCLIMATIC ZONE

Interior Douglas-fir Zone

LANDFORM

Bottomland - flat

0 - 9%

PARENT MATERIAL

Glacial Till

DESCRIPTION OF THE DYNAMICS

This unit occurs only in the Finney Creek drainage area on flat-lying glacial till deposits. A mixture of grassland and a riparian-like vegetation pattern occurs.

DEPTH OF UNCONSOLIDATED MATERIALS

2 metres +

TEXTURE

Silt loam - loam

COMPONENT BIOPHYSICAL SUBUNITS

1TE1.17

SOIL GREAT GROUP

Eutric brunisol with minor inclusions of Dark Grey Chernozems

PRESENT RESOURCE USE

Grazing

SOIL DRAINAGE

Moderately well drained

VEGETATION ASSOCIATIONS

Kentucky Bluegrass Association

RESOURCE CAPABILITY

AGRICULTURE - medium high capability

GRAZING - nil

FORESTRY - open range, no forest value

WILDLIFE - Deer - medium capability
Moose - low capability
Waterfowl - nil
Other - low capability

APPENDIX E

PRELIMINARY SOILS ANALYSIS DATA

PRELIMINARY SOILS ANALYSIS DATA*
FOR SOME OF THE SOIL ASSOCIATIONS FOUND IN THE LOCAL STUDY AREA

Soil Unit Name	Map Code	Horizon	Depth (in)	pH 1:1 H_2O	pH 1:2 $CaCl_2$	% OM	% N	% C	C/N	Exchangeable Bases me/100 g Ca	Mg	K	Na	SUM	CEC	Base Sat%	S ppm
Cache Crk	CC	Ah	0-5	7.9	7.4	3.65	0.212		9.99	13.97	1.94	1.30	0.12	17.33	13.22	100	17.31
		Ahk	5-11	7.7	7.2	5.21	0.309		9.78	15.32	2.47	0.55	0.06	18.40	15.93	100	14.67
		Ck_1	11-23	8.2	7.7	1.99	0.092		12.55	17.55	4.00	0.09	0.16	21.80	6.12	100	33.47
		Ck_2	23+	7.7	7.8	0.79	0.061		7.51	23.88	4.13	0.14	0.66	28.81	5.92	100	7.12
Carson	CS	LF	.39-0														
		Ae	0-3.1	7.6	6.4	4.48	0.149	2.60	17.45	13.60	6.20	2.26	0.04	22.10	21.29	100	1.5
		Bm	3.1-10.9	6.9	6.4	1.86	0.091	1.08	15.21	14.18	8.09	0.55	0.09	22.91	21.75	100	0.4
		BCK	10.9-21.2	7.8	7.3	0.51	0.025	0.29	11.54	14.60	1.93	0.16	0.04	16.73	7.04	100	0.3
		Ca	21.2-26.5	7.9	7.5	1.88	0.077	1.09	14.15	25.75	3.24	0.15	0.06	29.20	10.71	100	0.3
		Ck	26.5+	8.0	7.6												
Cavanaugh (Y63)	CG	L	3-0														
		Ae	0-1	6.4	5.9	3.98	0.120	2.31	19.30	9.68	2.66	1.48	0.03	13.85	14.06	48.36	1.5
		Bm_1	1-6	6.7	6.8	3.05	0.085	1.77	20.40	11.86	2.61	1.21	0.03	15.71	14.71	100	0.8
		Bm_2	6-12	7.3	6.8	2.37	0.062	1.34	21.95	12.50	2.15	0.39	0.05	15.09	12.92	100	0.9
		Ck_1	12-26	7.9	7.5	0.97	0.044	0.56	12.86	22.87	1.21	0.19	0.06	23.83	6.98	100	0.6
		Ck_2	12-39	8.0	7.5	0.93	0.040	0.54	13.50	22.40	1.20	0.18	0.08	23.86	23.72	100	2.4
		Ck_3	39+	8.2	7.6												
Cavanaugh (Y55)	CG	LF	.8-0	6.1	5.5	39.43	0.352	22.87	65.03								
		Ae	0-6.7	6.5	5.9	2.52	0.056	1.46	26.18	14.44	4.57	0.68	0.05	19.75	18.98	100	0.9
		Bm	6.7-16.5	6.6	6.0	0.83	0.023	0.48	20.70	18.44	6.81	0.22	0.23	25.70	25.70	100	2.3
		BC	16.5-24.4	7.1	6.8	0.54	0.037	0.31	8.37	10.41	2.33	0.17	0.32	13.28	13.54	98.08	0.6
		Ck_1	24.4-31.5	7.8	7.1												
		Ck_2	31.5+	7.9	7.4												

* B.C. Ministry of Agriculture, Soil Division, Kelowna

Soil Unit Name	Map Code	Horizon	Depth (in)	pH 1:1 H_2O	pH 1:2 $CaCl_2$	% OM	% N	% C	C/N	Exchangeable Bases me/100 g Ca	Mg	K	Na	SUM	CEC	Base Sat%	S ppm
Chasm	CM	LF	4-0	5.5	5.0	104.35	1.502		40.30								
		Aej	0-0.5	6.5	6.0	6.10	0.209	3.54	16.95	20.67	3.81	0.26	0.05	34.79	25.76	96.23	5.4
		Bm_1	0.5-16.5	6.4	5.8	2.82	0.101	1.63	16.16	17.56	3.60	0.37	0.15	21.08	19.48	100	1.3
		Bm_2	16.5-44	7.0	6.4	1.02	0.033	0.59	18.00	11.61	2.57	0.17	0.16	14.51	12.18	100	0.9
		Bm_3	44-59	7.2	6.6	1.16	0.034	0.67	19.55	13.09	3.21	0.21	0.16	16.67	14.11	100	
		Ck	59+	7.4	6.7					15.80	3.84	0.28	0.17	14.42	17.55	100	
Clemson	CW	LF	5.7-3.4	5.8	5.3	78.04	0.875	45.28	51.75								
		Ah	3.4-0	5.3	4.6	10.46	0.172	6.07	35.26								
		Ash	0-1.2	5.0	4.3	3.37	0.117	1.96	16.75	4.24	.99	0.43	0.08	5.74	13.50	42.25	0.8
		Bf	1.2-4.9	5.2	4.6	3.13	0.129	1.81	14.04	4.53	1.60	0.52	0.09	6.74	17.20	39.19	0.2
		Bm	4.9-9.8	5.1	4.3	1.08	0.071	0.62	8.79	2.54	0.89	0.30	0.09	3.82	9.67	39.50	0.3
		C	9.8+	5.5	4.7	0.54	0.048	0.31	6.46	3.85	0.76	0.43	0.06	5.10	7.61	67.02	0.4
Commonage	CO	Ah	0-7.8	7.5	7.0	4.38	0.172	2.54	14.73	18.3	3.56	1.44	0.19	23.49	17.40	100	20.3
		Bm	7.8-16.3	7.0	6.5	0.96	0.045	0.56	12.46	12.10	4.54	0.54	0.12	17.30	15.58	100	0.07
		BC	42-28.8	7.1	6.6	0.40	0.026	0.23	9.07	9.99	3.37	0.30	0.12	13.72	11.35	100	0.06
		Ck	28.8+	7.5	7.2												
Conant	CA	Ahe	0-2.3	6.6	6.0	2.18	0.042	1.27	30.24								
		Ac	2.3-11.3	6.6	6.1	0.71	0.028	0.41	14.61	4.71	1.18	0.19	0.05	6.33	5.49	100	1.0
		Bm_1	11.3-23.3	6.7	6.2	1.32	0.036	0.17	20.97	15.81	10.00	0.69	0.13	26.63	22.51	100	1.0
		Bm_2	23.3-33.5	6.7	6.2	0.13	0.008	0.08	9.07	5.37	2.46	0.21	0.12	8.16	5.09	100	0.3
		BC	33.5-52.5	6.8	6.4												
		C	52.5+	7.4	6.9												
Crown	CN	Ahe	0-5	4.16	7.2	13.34	0.497		16.22	33.02	3.16	0.90	0.02	72.51	35.41	100	21.59
		Ck_1	5-16	4.39	7.7	3.36	0.172		11.33	32.39	1.72	0.21	0.06	34.38	22.81	100	19.24
		Ck_2	16+	4.12	7.8	2.73	0.152		10.42	38.84	1.40	0.18	0.03	40.45	21.03	100	89.33
Gisborne	GN	L-H	1-0	5.2	4.8	45.82	1.373		40.48								109.06
		Ae	0-6	6.9	6.4	1.80	0.055		18.98	6.47	1.79	0.04	0.73	9.03	8.78	100	12.45
		Bm	6-17	6.8	6.3	0.66	0.033		11.60	3.95	1.66	0.02	0.48	6.11	6.27	97.44	12.23
		C	17+	6.7	6.3	0.73	0.023		18.41	3.94	3.06	0.04	0.45	7.49	6.32	100	12.73

Soil Unit Name	Map Code	Horizon	Depth (in)	pH 1:1 H_2O	pH 1:2 $CaCl_2$	% OM	% N	% C	C/N	Exchangeable Bases me/100 g Ca	Mg	K	Na	SUM	CEC	Base Sat%	S ppm
Glimpse	GS	Ah	0-8.4	6.9	6.4	3.76	0.178	2.18	12.11	11.90	2.63	0.72	0.07	15.32	14.34	100	2.4
		Bm	8.4-18.5	7.1	6.4	1.01	0.002	0.59	11.19	6.41	1.96	0.35	0.06	8.78	7.35	100	1.4
		Bc	18.5-39.4	7.1	6.5	0.45	0.030	0.26	8.85	4.57	1.75	0.37	0.06	6.75	6.36	100	0.6
		Ck	39.4+	7.6	7.0												
Godey	GD	Ah	0-4	7.3	6.8	1.73	0.148		6.78	9.47	6.21	1.33	0.0	17.01	15.30	100	11.19
		Bm	4-12	7.5	6.7	2.02	0.116		10.10	11.45	8.42	0.13	0.10	20.10	16.53	100	10.28
		IICa	12-21	8.0	7.5	0.97	0.104		5.41	18.33	5.71	0.10	0.20	24.34	10.09	100	22.94
		IICk	21+	8.0	7.4		0.070			13.73	3.98	0.19	0.15	18.05	8.02	100	51.89
Kerr	KR	Ah	0-2.5	6.4	6.1	23.38	0.697	13.56	19.45	45.47	5.98	1.13	0.13	50.71	29.46	100	
		Bm_1	2.5-4.3	6.0	5.4	3.77	0.184	2.18	11.88	13.33	2.56	0.48	0.10	16.47	20.54	80.20	2.1
		Bm_2	4.3-9.7	5.9	5.2	1.73	0.109	1.00	9.24	30.55	6.40	0.37	0.13	37.45	40.36	92.79	0.4
		IIC	9.7+	6.1	5.5	1.37	0.086	0.79	9.22	26.90	3.88	0.39	0.13	31.30	31.92	98.06	0.4
Maiden	MD	L-H	1-0	6.1	5.3	58.05	1.176		28.93	17.54	7.06	1.54	0.08	26.22	29.15	89.95	67.64
		Ac	0-2.5	6.6	6.1	5.49	0.195		16.33	20.03	8.56	1.07	0.26	29.92	27.80	100	9.66
		Bm	2.5-8.5	6.8	6.3	3.26	0.129		14.66	25.11	14.95	0.75	0.73	41.54	22.48	100	11.61
		Ck_1	8.5-28	8.0	7.3	2.50	0.086		16.86								32.10
		Ck_2	28+	8.3	7.3												45.36
McLaren	ML	L-H	1-0	6.5		55.98	1.307		24.81								54.65
		Ae	0-7	6.6	6.1	3.89	0.161		14.01	13.32	2.14	1.02	1.02	17.50	16.01	100	9.61
		Bt	7-17	6.5	5.9	2.83	0.096		17.10	17.42	2.86	1.22	0.17	21.67	25.13	86.23	12.18
		BC	17-25	7.0	6.5	3.28	0.129			17.42	2.74	0.62	0.05	20.83	19.74	100	9.30
		Ca	25-41	7.7	7.1												13.37
		Ck	41+	7.9	7.1												16.17
McQueen	MQ	Ah	0-5	6.7	6.2	11.11	0.198		32.55	7.65	5.52	1.05	0.09	14.31	16.35	87.52	10.82
		Bm	5-12	7.6	7.2	6.95	0.124		9.12	4.72	10.21	1.25	0.69	16.87	17.13	98.48	63.73
		Ca	12-25	8.2	8.0	1.26	0.065		11.24	30.26	9.51	0.22	1.73	41.72	6.40	100	10.52
		Ck	25+	7.9	7.9												16.44
Medicine	MC	Ah	0-4	7.1	6.4		0.364			15.15	7.74	3.24	0.18	26.31	27.35	96.20	8.09
		Bk	4-20	8.1	7.1	3.57	0.174		19.90	19.30	9.84	2.23	5.64	37.01	21.49	100	82.30
		Ca	20-36	8.6	7.5	2.41	0.081		17.26	24.77	8.64	1.58	1.82	37.81	18.50	100	86.28
		Ck	36+	8.4	7.4					18.57	9.18	1.83	0.52	29.90	17.33	100	35.16

Soil Unit Name	Map Code	Horizon	Depth (in)	pH 1:1 H_2O	pH 1:2 $CaCl_2$	% OM	% N	% C	C/N	Exchangeable Bases me/100 g Ca	Mg	K	Na	SUM	CEC	Base Sat%	S ppm
Minnie	MN	L-H	1-0	5.0	4.5	71.97	1.273		32.71								87.25
		Ae	0-8	5.7	5.3	2.65	0.068		22.60	7.81	2.26	0.49	0.23	10.79	12.32	87.58	9.53
		AB	8-17	5.8	5.8	1.0	0.023		25.22	8.43	1.85	0.33	0.47	11.08	9.51	100	11.18
		B-L	17-37	7.0	6.3	2.6	0.017		88.71	13.04	3.37	0.54	0.52	17.47	16.70	100	15.21
		Ca	37-64	7.8	7.1												20.00
		Ck	64+	8.1	7.1												13.85
Truda	TU	L-H	1-0	4.7	4.2	79.25	1.471		31.55								187.67
		Bm	0-9	5.5	4.6	0.94	0.086		6.34	5.40	1.70	0.44	0.11	7.65	14.64	52.25	13.32
		Ae	9-17	5.7	5.2	0.79	0.030		15.27	4.31	1.36	0.82	0.05	6.54	8.48	77.12	10.17
		AB	17-21	5.9	5.0	2.99	0.020		86.72	5.99	1.63	0.08	0.07	7.77	9.70	80.10	11.11
		Btj	21-29	6.2	5.3	0.79	0.040		11.46	8.09	2.19	0.10	0.10	10.48	12.12	86.47	9.82
		Bt	29-37	6.8	6.3												9.13
		BC	37-44	7.2	6.3												9.78
		Ck	44+	7.6	7.1												14.79
Tunkwa	TW	L-H	½-0	5.9	5.3	61.54	0.093		38.38								
		Ae	0-6	6.1	5.8	5.32	0.093		33.24	9.59	1.99	0.84	0.06	12.48	13.81	90.37	
		AB	6-14	5.9	5.6	0.45	0.056		25.38	9.54	1.23	0.74	0.22	11.73	11.55	100	
		Bt	14-24	7.4	6.6	1.58	0.040		22.91	13.03	3.62	0.51	0.13	17.21	17.13	100	
		BC_5	24-32	7.8	6.98	2.64	0.029		56.72								
		Ck_1	32-54	7.9	7.12												
		Ck_2	54+	7.8	7.2												