Purcell Wilderness Conservancy Provincial Park Predictive Ecosystem Mapping (PEM)

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INTRODUCTION

The Purcell Wilderness Conservancy Park was established as a Class A Park in 1995. It is located within the Central Columbia Mountains and Eastern Purcell Mountains ecosections (Figure 1). The Park includes a range of wet and dry biogeoclimatic (BEC) zones. The wetter Interior Cedar Hemlock dry, warm (ICHdw), Interior Cedar Hemlock moist, warm (ICHmw2) and Engelmann Spruce-Subalpine fir wet, mild (ESSFwm), Engelmann Spruce-Subalpine fir wet, mild, undifferentiated (ESSFwmu) and Engelmann Spruce-Subalpine fir wet, mild, parkland (ESSFwmp) subzones/variants characterize the western portion of the Park. In contrast, the drier Montane Spruce dry, cool (MSdk) and Engelmann Spruce-Supalpine fir dry, cool (ESSFdk), Engelmann Spruce-Supalpine fir dry, cool, undifferentiated (ESSFdku), and Engelmann Spruce-Supalpine fir dry, cool, parkland (ESSFdkp) subzones are representative of the eastern portion of the Park. Alpine tundra (AT) is abundant above elevations of approximately 2000 meters (Meidinger and Pojar 1991, Braumandl and Curran 1992).

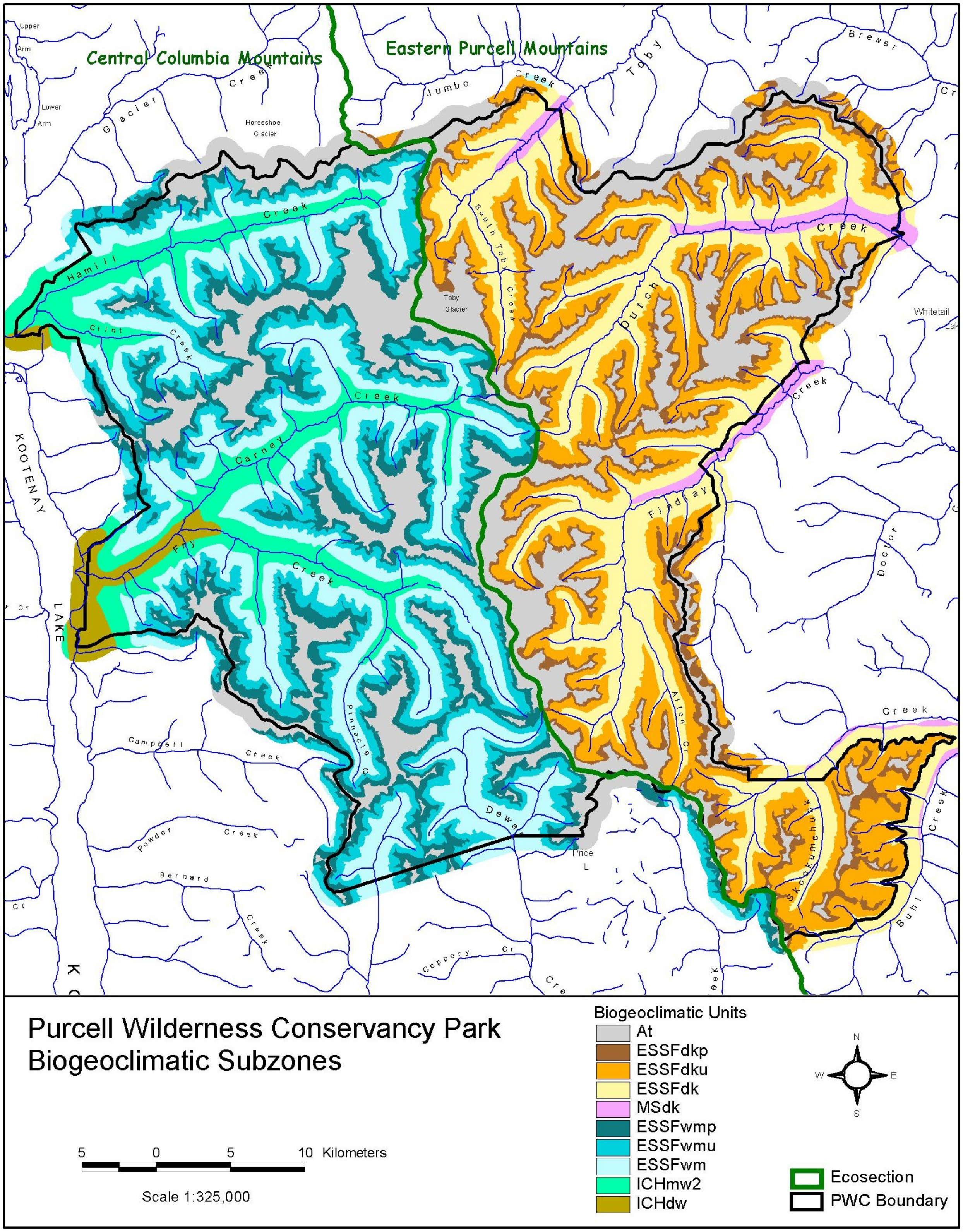
Upland coniferous forests are common throughout the ICH landscape. Western redcedar (*Thuja Plicata*) and western hemlock (*Tsuga heterophylla*) dominate the mature climax forests. Western larch (*Larix Occidentalis*), Douglas-fir (*Pseudotsuga menziesii*), and western white pine (*Pinus monticola*) are common seral species found on mesic and drier sites. Lodgepole pine (*Pinus contorta latifolia*), Douglas fir, Western larch and trembling aspen (*Populus tremuloides*) are common seral species associated with the MS zone. Black cottonwood (*Populus trichocarpa*) occurs on some wet sites and wetlands are common in the more rugged topography. Grassland ecosystems occur on drier south-facing upper slopes and ridges.
Engelmann spruce (*Picea glauca*) and subalpine fir (*Abies lasiocarpa*) are the dominant tree species in the ESSF. Whitebark pine (*Pinus albicaulis*), limber pine (*Pinus flexilus*) and alpine larch (*Larix lyallii*) also occur as seral species in this zone (Meidinger and Pojar 1991).

The young seral and mature confer forests, grasslands, avalanche tracks, rocky cliffs and talus, riparian, wetlands, meadows and stream habitats support abundant and diverse populations of flora and fauna. Known species at risk include Wolverine (*Gulo gulo luscus*) (Blue-listed), Grizzly bear (Blue-listed), caribou (Red-listed) and Least chipmunk (Red-listed).

The purpose of this project is:

1. to develop preliminary Predictive Ecosystem Mapping (PEM) for the Purcell Wilderness Conservancy Park; and,
2. to develop preliminary PEM-based wildlife habitat ratings for Grizzly bear (*Ursus arctos)*, caribou (*Rangifer tarandus*) and least chipmunk (*Tamias minimus selkirki*).

Figure 1: Biogeoclimatic Subzones



METHODS

PEM METHODS

Raster Based PEM

A raster data model was used as the format for the input layers and GIS processing. A 25 meter pixel size was used as the standard cellsize for all the PEM input layers.

PEM layers representing landscape character, including, slope, aspect, and shape are represented by a continuous surface. Neighbourhood analysis (moving window) was used to smooth and filter input layers and analyze the gradients between pixel values. Filters were used to reduce minor noise. Smoothing with different filter sizes was used to adjust layers to an appropriate scale for the landscape model. A majority filter was used for removing noise and a mean filter was used for smoothing. Continuous data was then classified into class intervals.

The software environment used for the raster processing was Arc/Info GRID version 7 and PCI Image Analysis version 7.

Source Data

The GIS inputs for the predictive ecosystem mapping model were derived from the following five source layers:

- TRIM - 1:20,000
- Forest Cover - 1:20,000 pre-VRI
- Landsat 7 - 30 meter multispectral satellite imagery
- Geology - 1:250,000
- Pre-TEM Biophysical – 1:50,000 photo typed with terrain attributes
- Biogeoclimatic subzones

Digital Elevation Model

A Digital Elevation Model (DEM) was the primary layer used to produce landscape layers. From the TRIM contour, elevation, and breakline layers a TIN (Triangular Irregular Network) was built. There was minimal weeding of TIN nodes in order to preserve the elevation detail of TRIM data. The TIN was resampled on a 25 meter pixel grid to create a raster DEM. Two DEM's were used for deriving landscape layers. The first was the raw output from the TIN to raster DEM conversion. This DEM represents the highest level of terrain complexity. A second DEM was produced from a 3x3 mean filter applied to the raw DEM to provide a low pass smoothing of the elevation model. The DEM smoothed out micro variations in the terrain and produced less noisy derivative output for terrain shape.

PEM Input Layers

There were 35 input layers created. Layers had a range of classes. Each class was assigned a numeric value, which in turn was assigned to the pixel values for the raster layer. The layer names and the numeric values of each layer relate to the knowledge tables. A zero value was the

NULL class. For single class layers, such as wetland, a value of one represented the presence of wetland, and zero represented no wetland was present at that pixel location.

The following lists the input variables used to derive the PEM and their data source.

Biogeoclimatic

- 150m vertical below ESSFdkp/AT boundary
- 150m above of ICHmw2/ ESSFwm boundary
- >150m above ICHmw2/ESSFwm boundary

Biophysical

- Colluvial veneer or Morainal veneer Cv only, Mv leading, or RCv or RMv
- Fluvial Active plain
- Moraine - MN

Forest Cover

- Alpine forest AF non-forest descriptor
- Lodgepole pine leading
- Pa leading
- Fd leading or LW western larch leading
- Spruce or balsam leading
- Cedar or hemlock not in the top three
- No Fd present in the stand, with species
- Aspen or Birch in top three with either > 20% or sum of two >20%
- Spruce anywhere in the stand
- Pa anywhere in stand
- La Alpine Larch anywhere in the stand
- Ac cottonwood anywhere in the stand
- Crown closure class = 0, ageclass > 1
- Crown closure class <= 1, ageclass > 1
- Crown closure > 1 and ageclass > 1
- Crown closure <= 2 and ageclas > 1
- Site Index 15-20
- Site Index > 20

Geology

- Calcareous rock
- Not calcareous rock

Landsat

- Rock - partly from Biophysical data
- Avalanche
- Vegetated rock - unforested veg on soil or rock
- Talus - partly from Biophysical data
- Glacier/snowfield
- Slope class 1,2 and veg rock

TRIM

- 0-5% slope
- 6-25%
- 26-50%
- 51-70%
- 71-100%
- 100% +
- 135 to 285 deg
- 285 to 135 deg
- Warm aspect slope 10-25%
- Cool aspect slope 10-25%
- shaded warm aspect
- sunny cool aspect
- concave
- straight slope
- convex
- convex-ridge
- flat, toe slope slp = 1
- flat, straight slp = 1, not toe
- toe -unvegetated removed, Slp = 2
- toe -unvegetated removed, Slp = 3
- toe
- not toe
- wetland from TRIM
- 100-200 meters of stream within 200 m radius
- >200 meters of streams within a 200 m radius
- slope class 1 within 50m of h20
- slope class 2 within 50m of h20
- slope class 1 and 2 >=50 and <=100m of h20

Landscape Layers from TRIM

From the 25 meter DEM the following layers were produced:

Slope - percent slope

Slope was classified into the following six classes:

- 0-5%
- 6-25%
- 26-50%
- 51-70%
- 71-100%
- over 100%

Aspect – warm/cool/neutral

The DEM with a 3x3 mean filter was used to produce the aspect layer. This helped to reduce small amounts of noise and speckle in the output. Aspect was classified into the following three classes:

Warm	135 to 285 degrees azimuth
Cool	285 to 135 degrees azimuth
Neutral	Any aspect with a slope of 25% or less

An aspect layer was also created for slopes less than 25%, this layer was treated separarate from aspects greater than 25% slope.

Solar Radiation

Solar radiation was calculated for Julian days 120, 171, and 273, the start, middle and end of the growing season. An average was taken for the three dates. The model (Kumar, 1997) calculates Kilojoules of energy per square meter per day. The model accounts for the solar azimuth, and elevation variation by the solar calendar. Latitude in decimal degrees is input to adjust sun elevation. The model is useful because it identifies regions with a cool aspect that receive sun due to exposed terrain position, and also identifies regions of warm aspect that are cool because of cast shadows and terrain blockage, such as in deep valley bottoms. These two classes were used as an adjustment layer for aspect.

Shape

Landscape curvature was classified into four main categories, concave, straight, convex, and convex-ridge. The DEM with a 3x3 mean filter was used to smooth out micro variations. Pixel values representing curvature range from negative values for concave to positive values for convex. A lookup table with the values was used to classify terrain shape:

Landscape Curvature	Pixel Values
Concave	-100 to -5
Straight	-5 to 5
Convex	5 to 15
Convex-ridge	15 to 200

- Flat, toe slope with slope class = 1
- Flat, straight slope, not toe, slope class = 1

A 3x3 majority filter was run on the classification to reduce noise and speckle and produce more homogenous units.

Toe Slope

The change in slope parallel to the direction of the slope was measured from the smoothed DEM. This measure represents regions of increasing and decreasing slope steepness. Pixel values represent the rate of decreasing slope from steeper to less steep slope values. Through an iterative process and a range of values they were identified as toe slopes areas. These values were extracted and represented the flattening out inflection point of the landscape profile.

A 3x3 majority filter was run on the classification to reduce noise and speckle and produce more homogenous units.

Landsat Image Classification

A Landsat 7 scene from August 9, 1999, was orthorectified to TRIM. Thematic bands 3,4,5 representing red, near-infrared and mid-infrared were the source image data for the satellite classification. TRIM was used as the primary source of ground control training. The overall classification accuracy, based on the training samples, was 83%. There was no field verification of the classification layer. A maximum likelihood classification was trained with the following land cover classes:

- rock
- talus
- avalanche chute
- sparse vegetation with rock/soil
- glacier or snow

The avalanche chute class required post-classification processing since its spectral signature occurred in some non-avalanche areas.

TRIM Water Layers

Wetland

Wetland boundaries were extracted from the TRIM water layer and wetland polygons were created. The polygons were then rasterized to a 25 meter pixel size.

Stream Density

A circular moving window with a 200 meter radius was used to measure the density of streams. Each pixel in the output was assigned a value representing the length in meters of stream within the moving window. The following two classes were created:

1. 100 - 200 meters of stream/hectare
2. Greater than 200 meters of stream/hectare

Geology and Soil

Calcareous bedrock classification was considered.

Forest Cover

From the Ministry of Forest forest cover polygons, the following layers were extracted:

- Alpine forest AF non-forest descriptor
- Lodgepole pine leading
- Pa (whitebark pine) leading
- Fd (Douglas-fir) leading or Lw (western larch) leading
- Spruce or balsam leading
- Cedar or hemlock not in the top three
- No Fd present in the stand, with species
- Aspen or Birch in top three with either > 20% or sum of two >20%
- Spruce anywhere in the stand
- Pa anywhere in stand
- La (Alpine Larch) anywhere in the stand
- Ac (cottonwood) anywhere in the stand
- Crown closure class = 0 , ageclass > 1
- Crown closure class <= 1, ageclass > 1
- Crown closure > 1 and ageclass > 1
- Crown closure <= 2 and ageclas > 1
- Site Index 15-20
- Site Index > 20

PEM Processing

The 35 input GIS layers were combined into a single raster layer. Each pixel value in the combine grid was assigned a unique number representing the combination of the class values of all the input layers. While there were over ten million possible permutations, the actual number of combinations for the entire Purcell Wilderness Conservancy was approximately 117,000 Each record in the combined attribute database contained the attribute value for each input layer. This database was the input for applying the knowledge tables for the PEM model.

We developed preliminary grizzly bear, caribou and least chipmunk habitat models based on the preliminary PEM techniques and results. The two main components of the preliminary species-habitat models are the

- species account, and
- habitat ratings.

PEM Knowledge Base Creation & Knowledge Tables

The PEM ecological knowledge base is used to process the input data and allocate each map attribute (GIS input layer) to the most likely ecological class. The knowledge base is a coding of the relationship between each map attribute and a site series/ecosystem unit of a biogeoclimatic unit. Knowledge bases were created for each biogeoclimatic subzone and variant in the project area by developing knowledge tables.

Knowledge tables are data tables of site series/ecosystem units and map attributes and values indicating the ecological relationships between them. Each value in a table represents the probability of a site series or ecosystem unit occurring with a particular attribute (site or vegetation feature) on the landscape. The rating scheme used to indicate ecological relationships is described in Table 1.

Table 1: Ratings Description

Rating	Probability
0	slim to no chance (0-10%) of occurrence
2,3	some chance (10-33%) up to 1/3 probability
5	moderate (average) chance (33-66%) 1/3 – 2/3
10	high chance of occurrence (66-90%) >2/3
25	indicative of ecosystem (90+%) almost certain chance of occurrence
50	absolute occurrence for a double class attribute (i.e., avalanche – chute or run-out)
100	absolute occurrence for a single class attribute (i.e., wetland, rock, talus)

A rating of "2" was sometimes used to break potential ties for similar ecosystems. Some of the values were also increased or decreased to reflect the relative importance of particular attributes for predicting specific ecosystems. The knowledge base values used for the initial analysis of the input data and preliminary mapping were derived using information from the Nelson ecological field guide by Braumandl and Curran, 1992 and from TEM projects in the vicinity of the park.

Predictive Ecosystem Mapping Concepts & Knowledge Base Logic

Distribution of ecosystems in the mountainous landscape of the Purcell Wilderness Conservancy Park is strongly influenced by the following factors.

- physiography – influences regional climate
- elevation – influences local climate
- topography – influence the distribution of site moisture & solar radiation inputs

The park is divided into two main climate regions due to the physiography of the area. A moist and a dry climate region correspond to the windward and leeward sides of the mountain range and are associated with different temperature and precipitation conditions and therefore different biogeoclimatic units and ecosystems. Within the two different climatic regions, elevation and topography including slope position & shape, slope gradient and aspect are the main factors influencing the distribution of ecosystems on the landscape.

Elevation is stratified by biogeoclimatic units that correspond to temperature and precipitation ranges and specific toposequences of related ecosystems. Each ecosystem in a toposequence is associated with unique combinations of plants or plant associations that correspond to the local climate and other site factors.
Within the biogeoclimatic units or elevation bands on the landscape, the distribution of ecosystems is strongly influenced by the topography or shape of the land.

In the steep topography of the park, slope position & shape correlate to the amount of site moisture available for plant growth, which in turn influences the distribution of ecosystems within biogeoclimatic units. Crest and upper slope positions with convex shape are dry, moisture shedding sites that are associated with dry ecosystems. Lower and toe slope positions with concave shape receive moisture from upslope sites and are generally associated with moist to wet ecosystems. Mid and level slope positions with straight slopes reflect climatic inputs of water and are typically associated with mesic or average moisture sites.

Slope gradient also affects soil drainage and site moisture availability. Steep slopes are usually well drained and shed soil moisture quickly. They tend to be drier than more gentle slopes where drainage is impeded and sites have higher moisture availability due to the slower movement of subsurface water through the soil.

Aspect influences the amount of solar radiation available for plant growth. The amount of solar radiation influences air and soil temperature as well as site moisture availability. Sites with southerly aspects receive more sunlight and have warmer air and soil temperatures but tend to dry out quickly due to high rates of evapotranspiration on the warm exposures. Sites on north aspects receive less sunlight and have cooler air and soil temperatures but are less susceptible to moisture deficits during the growing season.

Edaphic factors such as soil texture, that influences soil drainage and site moisture, and soil nutrient status also affect site growing conditions and therefore the types of ecosystems that develop on the landscape.

Assumptions used to develop ecological knowledge bases

A number of assumptions were used to guide the assignment of attribute values to site series or ecosystem units in order to classify and map ecosystems in the park. The ecological knowledge bases rely heavily on topographic features of the landscape to predict ecosystem distribution. Topographic features considered to be important map attributes extracted from TRIM digital data include slope gradient, slope position, slope shape, and slope orientation or aspect. It was assumed that ecosystems are strongly correlated to site moisture conditions that are created by the interaction of those features. Site moisture classes that are typically associated with slope topographic features, assuming medium-textured soils with average nutrient availability, are shown below in Tables 2 and 3.

Table 2: Relationship between slope gradient and site moisture

Slope Gradient Class	Range	Site Moisture Classes
flat	0-5%	average (mesic) to very wet (subhydric)
gentle	6-25%	average (mesic) to wet (hygric)
moderate	26-50%	dry (subxeric) to moist (subhygric)
mod-steep	51-70%	very dry (xeric) to average (mesic)
steep	71-100%	very dry (xeric) to dry (submesic)
very steep	>100%	very dry (xeric) to dry (subxeric)

Table 3: Relationship between slope position/slope shape and site moisture classes

Slope Position	Slope Shape	Site Moisture Classes
crest	convex-ridge	very dry (xeric) to dry (submesic)
upper slope	convex	dry (subxeric) to average (mesic)
mid slope	straight	dry (submesic) to moist (subhygric)
mid to lower	concave, not toe	average (mesic) to moist (subhygric)
lower to toe	toe slope (>5%)	moist (subhygric) to wet (hygric)
toe to level	toe slope, flat (< or = 5%)	moist (subhygric) to very wet (subhydric)
level	flat, not toe	average (mesic) to very wet (subhydric)

Some ecosystems are strongly correlated with slope orientation, and especially warm southerly aspects. Therefore, warm and cool aspect map attributes were also important for predicting the location of specific ecosystem units.

Some soil parent materials including colluvial and morainal veneers and fluvial active plain deposits were identified using biophysical habitat mapping digital data and used to infer site moisture and help predict ecosystem distribution. It was assumed that shallow veneer landforms are associated with dry ecosystem types and fluvial active plains with wet ecosystems along creeks and rivers. The distribution of calcareous bedrock was also used as a map attribute to predict the occurrence of ecosystems in the east part of the park where several ecosystems in the MSdk and ESSFdk biogeoclimatic subzones are strongly correlated to soils derived from calcareous parent materials.

Map attributes developed from satellite digital data were used to identify and map sparsely vegetated ecosystems at high elevations, avalanche tracks and run-out zones, and non-vegetated map units including rock outcrop, talus, glaciers and snowfields and non-vegetated moraine associated with receding glaciers.

Forest cover digital data was also useful for predicting ecosystems on the landscape. The most important map attributes derived form forest cover data corresponded to tree species composition. Whitebark pine and alpine larch were useful for mapping ecosystems in the upper subalpine and parkland, as those species are diagnostic indicators of some units. Spruce was used to predict the distribution of moist to wet ecosystems in some of the biogeoclimatic units.

The distribution of Douglas-fir and to a lesser extent lodgepole pine were used to predict drier ecosystem types.

Crown closure data were also used to identify and map ecosystems. Very open forest types such as dry Douglas-fir stands on shallow to bedrock soils and open spruce bogs on organic deposits were delineated using low crown closure attributes.

Site index was another attribute developed from forest inventory data. It was assumed that moderate to high site index values that indicate better site productivity could be used to identify moist to wet ecosystems on productive sites that occur in moisture-receiving, lower and toe slope positions. Site index attributes usually received low rating values.

The distance of sites from streams and water was used to develop map attributes derived from TRIM data. It was assumed that wet forested ecosystems associated with floodplain sites and riparian zones are located close to streams or open water of lakes and wetlands. The distance from water features in combination with slope class attributes was used to predict the distribution of moist to wet ecosystems within biogeoclimatic units. The density of streams within an area was also used to predict the occurrence of ecosystems. It was assumed that wet sites tend to occur in areas with higher concentrations of streams and drier sites are found in areas with low concentrations of streams.

INITIAL CLASSIFICATION AND MAPPING OF ECOSYSTEMS

The ecological knowledge from the knowledge tables was applied to the input data through an inference process that totaled site series/ecosystem unit values for map attribute data sets corresponding to pixels on the landscape. The site series/ecosystem unit with the highest total value for an attribute data set was assigned to that data set. Using that process, all pixels in the project area were classified by assigning ecosystems to unique combinations of attribute data. The initial classification of all the map attribute combinations was summarized in output tables that were used to evaluate the knowledge base relationships and preliminary mapping results.

WILDLIFE METHODS

Species Account

Individual species accounts were developed for grizzly bear, caribou and least chipmunk. This included a comprehensive review of literature on the species' biology and seasonal habitat requirements. Existing inventory and on-going research was reviewed and considered. Regional 'experts' were also interviewed. This information was collated and reported in individual species accounts in accordance with provincial format (RIC 1999).

Habitat Ratings

Habitat ratings were assigned to the structural stages within the PEM polygons. For caribou, a 6-class rating system was used based on a detailed knowledge of the species' habitat use; a 4-class rating system was used for grizzly bear based on an intermediate knowledge of the species' habitat use; and a 2-class rating system was used for least chipmunk based on limited information. A descriptive account of the ratings assumptions and ratings adjustment factors is provided in the written Species Accounts for each species.

RESULTS AND DISCUSSION

The information contained in Table 4 lists the ecosystem units (site series) occurring within the biogeoclimatic subzones and variants of the Purcell Wilderness Conservancy Park. The information is a summary of information contained within the "Field Guide for the Site Identification and Interpretation for the Nelson Forest Region" (Braumandl and Curran, 1992) and the Provincial Site Series Mapping Codes summary.

Table 4: Ecosystem Units (Site Series or SS) Occurring Within the Biogeoclimatic Subzones and Variants of the Purcell Wilderness Conservancy Park

BEC Subzone/ Variant	SS Number	SS Map Symbol	SS Name	Typical Site Conditions[1]
AT	00	AW	Mountain-avens - Snow willow	moderate - (steep) slopes; shallow, coarse textured soil subxeric - mesic
AT	00	BP	Black alpine sedge - Woolly pussytoes	gentle slope, deep, medium textured soils mesic - subhygric
AT	00	SL	Saxicolous lichen	(moderate) - steep slopes, very shallow, medium textured soil xeric - subxeric
ESSFwm	00	AC	Avalanche Chute	avalanching unit; moderate to steep slope subxeric – subhygric
ESSFwm	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic - subhygric
ESSFwm	01	FA	Bl – Azalea - Arnica	gentle slope; deep, medium-textured soils mesic
ESSFwm	00	FG	BI -Pa - Grouseberry	significant slope, deep, medium textured soils xeric - subxeric
ESSFwm	00	FH	Bl - False azalea - Horsetail	gentle slope, deep, medium textured soils subhygric - hygric
ESSFwm	04	FQ	Bl - Azalea –Queen's cup	gentle lower slope receiving site; deep, medium textured soils, rich soil nutrient regime subhygric - hygric
ESSFwm	02	FR	Bl - Rhododendron - Azalea	gentle slope; deep, medium-textured soils, higher elevation xeric - submesic
ESSFwm	03	RA	BlHw - Rhododendron - Azalea	gentle slope; deep, medium-textured soils, lower elevations in subzone submesic
ESSFwm	00	SM	Sedge March	depressional wetland, mineral soil, fluctuating water level subhydric-hydric
ESSFwmu	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope, deep, medium-textured soils subxeric – subhygric
ESSFwmu	00	AR	Avalanche Runout	avalanching unit, gentle slope, deep, medium-textured soils submesic – subhygric
ESSFwmu	00	FB	Bl - Black huckleberry - Mountain arnica	gentle slope, deep, medium textured soils mesic – subhygric
ESSFwmu	00	FR	Bl - White-flowered rhododendron - White mountain-heather	moderate to steep slope, deep, medium textured soils submesic – mesic

BEC Subzone/ Variant	SS Number	SS Map Symbol	SS Name	Typical Site Conditions[1]
ESSFwmu	00	WE	Willow - Horsetail	level, deep, medium textured soils hygric
ESSFwmu	00	WH	Pa - Black huckleberry - White mountain-heather	moderate to steep slope, deep, medium textured soils subxeric – submesic
ESSFwmu	00	WS	Willow - Sedge	level, deep, medium textured soils hygric – subhydric
ESSFwmp	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric – mesic
ESSFwmp	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic – subhygric
ESSFwmp	00	FA	Bl - White mountain-heather - Arrow-leaved groundsel	gentle slope, moisture receiving; deep, medium textured soils subhygric-hygric
ESSFwmp	00	FM	Bl - White mountain-heather - Western pasqueflower	crest position,shallow, medium textured soils xeric – subxeric
ESSFwmp	00	FS	Bl - White mountain-heather -Sitka valerian	significant slope; deep, medium textured soils submesic - mesic
ESSFdk	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric – subhygric
ESSFdk	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic – subhygric
ESSFdk	02	DM	Douglas maple - Soopolallie	moderate to steep slope, warm aspect; coarse textured soil xeric-subxeric
ESSFdk	01	FA	Bl - Azalea - Foamflower	gentle slope, deep, medium-textured soils mesic
ESSFdk	03	FG	Bl - Azalea - Grouseberry	gentle slope; deep, medium-textured, non-calcareous soils subxeric - mesic
ESSFdk	06	FH	Bl - Azalea - Horsetai	gentle to level slope, receiving sites, deep medium-textured soils subhygric – hygric
ESSFdk	05	FM	Bl - Azalea - Step mos	gentle, lower slope, moisture receiving, deep,medium-textured soils subhygric
ESSFdk	04	FS	Bl - Azalea - Soopolallie	gentle slope, deep, medium-textured, calcareous soils submesic - mesic
ESSFdk	07	WS	Willow - Sedge	mineral wetland, deep, medium-textured soils subhydric
ESSFdku	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric - subhygric
ESSFdku	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic - subhygric
ESSFdku	00	FG	Bl - Grouseberry	gentle, convex slope, deep, medium-textured soils subxeric –submesic
ESSFdku	00	FH	Bl - Horsetail	gentle to level slope, receiving sites, medium textured soil hygric

BEC Subzone/ Variant	SS Number	SS Map Symbol	SS Name	Typical Site Conditions[1]
ESSFdku	00	HG	Bl - Pink mountain-heather	gentle concave slope, deep medium-textured soils subhygric
ESSFdku	00	LG	Subalpine larch - Mixed herb	gentle slope, deep, medium-textured soils mesic
ESSFdku	00	LH	Subalpine larch - Mountain-heather	gentle slope, deep, medium-textured soils submesic - mesic
ESSFdku	00	LM	Subalpine larch - Moss	steep slopes, cool aspect, shallow, coarse-textured soils subxeric - mesic
ESSFdku	00	PJ	Pa - Juniper	steep slopes, warm aspect, deep, medium-textured soils xeric - subxeric
ESSFdku	00	PW	Western pasqueflower - Arctic willow	gentle concave slope, deep medium-textured soils, disclimax mesic - subhygric
ESSFdku	00	WS	Willow - Sedge	level, mineral wetland; deep, medium-textured soils subhydric
ESSFdkp	00	AC	Avalanche Chute	avalanching unit: significant slopes subxeric - mesic
ESSFdkp	00	AW	Mountain-avens - Snow willow	gentle slopes; shallow, coarse-textured soils submesic - mesic
ESSFdkp	00	DV	Subalpine daisy - Sitka valerian	gentle slopes, deep, medium textured soils ,receiving sites,disclimax mesic - subhygric
ESSFdkp	00	EM	SeBl - White mountain-heather	significant slopes, deep, medium textured soils mesic - submesic
ESSFdkp	00	LM	Bl - Subalpine larch-White mountain-heather	gentle slopes, deep, medium textured soils ,receiving sites mesic - subhygirc
ESSFdkp	00	WF	Whitebark pine - Subalpine fir	significant slopes, warm aspect; shallow, coarse-textured soils subxeric - mesic
ESSFdkp	00	YW	Yellow mountain-heather - Woolly pussytoes	significant slopes, warm aspect, deep, medium textured soils submesic - mesic
ICHmw2	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric - subhygric
ICHmw2	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic - subhygric
ICHmw2	09	BS	Bluejoint - Sedge	organic wetland subhydric
ICHmw2	08	(CS) RS	CwSxw – Skunk cabbage	mineral swamp, poorly drained, level collecting moisture; deep fine-textured soil hygric-subhydric
ICHmw2	03	DF	FdCw - Falsebox - Prince's pine	significant slope, warm aspect; deep, medium-textured soil xeric - mesic
ICHmw2	01	HF	HwCw - Falsebox - Feathermoss	gentle slopes; deep, medium-textured soils; mesic
ICHmw2	05	HO	CwHw - Oak fern - Foamflower	gentle slopes, receiving position; deep, medium-textured soils mesic - subhygric
ICHmw2	02	RC	Rhacomitrium -	gentle slopes, crest position; shallow soil

BEC Subzone/ Variant	SS Number	SS Map Symbol	SS Name	Typical Site Conditions[1]
			Cladonia	very xeric - xeric
ICHmw2	06	RD	CwHw - Devil's club - Lady fern	gentle slopes; receiving position; deep, medium-textured soils subhygric - hygric
ICHmw2	04	RF	CwFd - Falsebox	significant slope, cool aspect; deep, medium-textured soil xeric - submesic
ICHmw2	07	RH	CwHw - Horsetail	level, receiving position; deep, medium-textured soil hygric
ICHdw	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric - subhygric
ICHdw	00	AR	Avalanche Runout	avalanching unit, gentle slope submesic - subhygric
ICHdw	02	DO	FdPy - Oregon-grape - Parsley fern	significant slope, warm aspect; deep soils xeric - subxeric
ICHdw	03	HD	CwHw - White pine - Devil's club	gentle slope; lower receiving sites; deep, medium-textured soils subhygric
ICHdw	04	RD	CwHw - Devil's club - Lady fern	level, receiving sites; deep, medium-textured soils hygric
ICHdw	01a	RFA	CwFd - Falsebox:sx-sm phase	gentle slope; deep, medium-textured soils subxeric - submesic
ICHdw	01b	RFB	CwFd - Falsebox:m-shg - phase	gentle slope; deep, medium-textured soils mesic - subhygric
ICHdw	00	WS	Willow – Sedge	level, wetland subhydric
MSdk	00	AC	Avalanche Chute	avalanching unit, moderate to steep slope subxeric - subhygric
MSdk	00	AR	Avalanche Runout	avalanching unit, gentle slope; deep, medium-textured soils submesic - subhygric
MSdk	03	LJ	Pl - Juniper - Pinegrass	steep slopes, warm aspect; deep, medium - textured soils, calcareous xeric – submesic
MSdk	04	LP	Pl - Oregon-grape - Pinegrass	gentle slopes; deep medium-textured soils submesic – mesic
MSdk	07	SB	Sxw - Scrub birch - Sedge	open treed bog; organic soil subhydric
MSdk	01	SG	Sxw - Soopolallie - Grouseberry	gentle slope; deep, medium-textured soils mesic
MSdk	06	SH	Sxw - Dogwood - Horsetail	level; moisture receiving sites; deep, medium-textured soils, calcareous hygric
MSdk	05	SS	Sxw - Soopolallie - Snowberry	lower slope, receiving sites; deep, medium-textured soils subhygric
MSdk	02	SW	Saskatoon - Bluebunch wheatgrass	significant slopes, warm aspect; deep, medium-textured soils, non-calcareous
MSdk	00	WS	Willow- Sedge	mineral wetland subhydric

1 Significant slopes = slopes with >25% gradient
Moderate slopes = slopes with 26-50% gradient; Steep slopes = slopes with >50% gradient

MAPPING PROBLEM AREAS

Problem areas encountered during predictive ecosystem mapping of the Purcell Wilderness Conservancy Park are related to difficulties in accurately predicting closely related ecosystems that occur on similar sites. Those ecosystem units are often most easily differentiated using understory vegetation observed on the ground. The differences in vegetation that occur on sites with similar physical features may correspond to subtle differences in terrain shape, site moisture and/or soil characteristics that are not easily recognized using existing map digital data.

Soil characteristics, such as soil texture, soil drainage and nutrient availability can influence growing conditions and therefore the ecosystems that occur on sites. Digital data were not available to create map attributes for those soil features. As a result ecosystems predictions made mainly on the basis of topographic features could be inaccurate due to compensating effects of soil features that could not be accounted for and rated in the knowledge tables.

Some general mapping problem areas were noted during the predictive ecosystem mapping process. It is difficult to accurately predict forested ecosystems on wet sites because several units can occur on moisture-receiving sites of toe to level slope positions of valley bottoms. Closely related units on those sites can have similar tree species compositions and similar ratings for stream concentration and distance to water attributes. Wet sites may support different ecosystems due to soil characteristics such as soil texture and associated drainage that can only be identified through field sampling. Ecosystem complexes that are difficult to map using predictive models may also occur in wet valley bottom areas.

In some biogeoclimatic units, predictive ecosystem classification is suspect on straight slopes in mid slope positions. Sites can range from slightly drier than average (submesic) to average moisture (mesic) or even moist (subhygric) depending on subtle differences in slope shape and on soil texture and drainage. On the same aspect, if there are no differences in tree species composition, soil depth or some other map attribute, then it is difficult to predict site moisture and delineate forested ecosystems. In mid slope positions, sites could be drier than predicted due to coarse-textured soils or moister on fine-textured parent materials.

On mid to lower slopes, nutrient-rich, mesic soils may support ecosystems that typically occur on moister sites and moist sites with nutrient poor soils and low site productivity may be associated with ecosystems that usually occur on slightly drier sites. The influence of soil characteristics such as nutrient status can not be predicted using the available map layer information.

Specific mapping problems encountered in the various biogeoclimatic subzones and variants of the study area are described below.

In the ICHdw, it is difficult to distinguish between the 01a and 01b site series on gentle, straight slopes that can have submesic to subhygric moisture regimes depending on edaphic factors (i.e., soil texture) associated with the sites. It is also difficult to differentiate between the moist to wet, 03 and 04 ecosystems on level, toe slope sites as both units can occur in those slope positions and have similar ratings for map attributes.

In the ICHmw2, it is difficult to delineate the wet 07 and 08 ecosystem units on flat, fluvial sites. The 08 unit may be associated with finer-textured silty soils on sites with poor drainage and water tables near the surface. The 07 unit in the same slope position may occur on coarser-textured soils with better drainage and lower water tables. The 05 and 06 site series can both occur on moist to wet sites in toe slope positions. The 06 unit may occur on more gentle terrain with finer-textured soils and more seepage within 100 cm of the surface. On cool aspect sites, both the 04 and 01 units can occur on average moisture sites with submesic to mesic moisture regimes. The 04 site series tends to develop on coarser-textured soils with higher coarse fragment content.

In the MSdk, the 04 and 01 ecosystems have similar site moisture regimes and can occur in similar topographic positions on the landscape. The 04 unit may be associated with steeper slopes, coarser-textured soils below 30 cm and/or restrictive layers in the soil. In areas with calcareous parent materials it is difficult to accurately predict the ecosystem on gentle toe slopes in the valley bottoms where both the 05 and the 06 units can occur on moist fluvial sites.

In the ESSFdk, the 03 and 04 (on calcareous soils) ecosystems can occur on mesic sites in similar slope positions as the 01 unit. All three units can also occur on gentle to moderately steep slopes as well so average moisture sites in mid slope positions may not be accurately mapped without some other distinguishing map attribute such as tree species composition, soil depth and/or soil texture. The 05 and 06 units can both occur on moist to wet (subhygric to hygric) sites on gently sloping toe to level slope positions in the valley bottoms and tend to have similar tree species compositions.

The higher elevation ecosystem units are somewhat easier to predict because in general there are fewer units in the subzones or variants and there is less overlap of physical site features. Whitebark pine and alpine larch are high elevation species that are also very useful for delineating specific ecosystem units. There are also dry to moist, non-forested meadows that are easily distinguished from forested ecosystems. Meadow and tundra ecosystems at high elevations may be difficult to delineate in some areas where topographic attributes are similar for closely related ecosystems such as moist parkland meadows and sedge wetlands or tundra and heath ecosystems in the alpine.

PRELIMINARY WILDLIFE SPECIES ACCOUNTS AND HABITAT RATINGS

Following development of preliminary PEM, the next step in conducting ecological-based habitat mapping involves development of preliminary *species-habitat models* (RIC 1999). The two main components of the species-habitat model are the Species Account and the Habitat Ratings. The preliminary mapping and species-habitat models are intended to provide the framework to direct, as required, follow-up field sampling and data collection leading to final ecological-based habitat capability and suitability mapping (see Recommendations).

The caribou, grizzly bear and least chipmunk preliminary *Species Accounts* developed for the Purcell Wilderness Conservancy Park are detailed in Appendices A, B, and C respectively. Based on literature review, interviews with experts and inventory collation, the Species Account consists of a written description of the species' status, life history, distribution, life requisites, ecology and seasonal habitat use requirements.

The caribou, grizzly bear and least chipmunk preliminary *Habitat Ratings* are developed for structural stages (Table 1) within the ecological classification units identified through the PEM process. Based on varying degrees of inventory and knowledge of each species and species' habitat requirements, three rating schemes were used. Based on detailed inventory (telemetry, population census, habitat modeling), a 6-class rating scheme was employed for caribou (Appendix D). A 4-class rating scheme was used for grizzly bears given an intermediate level of knowledge of the species, its' distribution and habitat use (Appendix E). A 2-class rating scheme (presence/absence) was used for least chipmunk in recognition that very little information was available with respect to the least chipmunk and its habitat requirements and distribution (Appendix F). Workshops involving regional researchers and local biologists were held to derive the preliminary species habitat ratings. Participants are listed in Table 5.

Table 5: Habitat Ratings Workshop Participants

CARIBOU	GRIZZLY BEAR	LEAST CHIPMUNK
Trevor Kinley Sylvan Consulting Invermere, B.C.	Bruce McLellan MoF, Research Br. Revelstoke, B.C.	Jakob Dulisse Pandion Research Nelson, B.C.
John Bergenske Diversity Consulting Skookumchuck, B.C.	John Flaa Parks Canada Revelstoke, B.C.	Dennis Hamilton Nanuq Consulting Nelson, B.C.
Peter Holmes MELP Invermere, B.C.	Peter Holmes MELP Invermere, B.C.	
Rob Neil MELP Cranbrook, B.C.	Rob Neil MELP Cranbrook, B.C.	
Dennis Hamilton Nanuq Consulting Nelson, B.C.	Dennis Hamilton Nanuq Consulting Nelson, B.C.	

Table 6: Stuctural Stages and Definitions

Structural Stage	Description	Age Criteria*
1 Non-vegetated/ sparse (NS)	Initial stages of primary and secondary succession. Little or no residual vegetation except for bryophytes and lichens. Less than 10% cover of vascular plants. This stage may be prolonged (50-100+ yrs.) where there is little or no soil development (bedrock, boulder field)	<20 years for normal forest succession. Up to 100+ years for rocky or bouldery sites and other severe sites
1a Non-vegetated (NV)	less than 5% vegetation	
1b Sparse (SP)	Less than 10% cover of vascular plants. Up to 100% cover of bryophytes and lichens. This stage may be prolonged (50-100+ yrs) where there is no soil development (bedrock, boulder fields).	
2 Herb (H)	Early successional stage or disclimax/climax communities (avalanche tracks, wetlands, and grasslands) dominated by herbaceous vegetation; some invading or residual shrubs and trees may be present. Tree cover <10%, herbaceous cover >25%, or >33% total cover	<20 years for normal forest succession. Up to 100+ years for disclimax/climax communities

Structural Stage	Description	Age Criteria*
3 Shrub/Herb (SH)	Early successional stage or disclimax/climax communities dominated by shrubby vegetation < 10 m tall. Seedlings and advance regeneration may be abundant. Tree cover <10%, shrub cover >25% or >33% total cover	<20 years for normal forest succession. Up to 100+ years for disclimax/climax communities
3a Low Shrub (LS)	Early successional stage or disclimax/climax communities dominated by shrubby vegetation < 2 m tall. Seedlings and advance regeneration may be abundant. Tree cover <10%, shrub cover >25% or >33% total cover	<20 years for normal forest succession. Up to 100+ years for disclimax/climax communities
3b Tall Shrub (TS)	Early successional stage or disclimax/climax communities dominated by shrubby vegetation >2 m and <10 m tall. Seedlings and advance regeneration may be abundant. Tree cover <10%, shrub cover >25% or >50% total cover	<20 years for normal forest succession. Up to 100+ years for disclimax/climax communities
4 Pole/Sapling (PS)	Trees >10 m tall, have overtopped shrub and herb layers and stands are typically dense; younger stands are vigorous, usually >10-15 yrs old, older pole-sapling stages, composed of dense stagnated stands (up to 100 yrs old) are also included in this stage. The pole-sapling stage persists until self-thinning and canopy differentiation becomes evident (often by 30 yrs in vigorous stands).	<20 years for normal forest succession. Up to 100+ years for dense (>200 stems per ha) stagnant stands.
5 Young Forest (YF)	Self thinning has become evident and the forest canopy has begun differentiation into distinct layers. Begins as early as age 30 and extends to 50-80 years depending on tree species.	40-80 years
6 Mature Forest (MF)	Trees that were established after the last disturbance have matured and a second cycle of shade tolerant trees may have become established; understories become well developed as the canopy opens up.	80-140 years for BGC Group A >80-240 years for BGC Group B
7 Old Forest (OF)	Old, structurally complex stands comprised mainly of climax tree species, although older seral remnants may still be present in the upper canopy; standing snags and rotting logs on the ground are typical and understories are patchy	>140 years for BCG Group A >240 years for BCG Group B

* Age criteria reflect typical rates of succession on forested sites. Stand structure should be emphasized rather than age.

BGC Group A: BWBSdk, BWBSms; BWBSwk; BWBSvk; ESSFvk; ESSFdc; ESSFdk; ESSFdv; ESSFxc; ICHdk; ICHdw; ICHmk1; ICHmk2; ICHmw1; MS; SBPS; SBSdh; SBSdk; SBSdw; SBSmc; SBSmh; SBSkm; SBSmm; SBSmw; SBSwk1 (on plateau); SBSwk3

BGC Group B: all other biogeoclimatic units

RECOMENDATIONS

Some of the mapping problems associated with accurately predicting similar ecosystems within biogeoclimatic units could be resolved by field sampling. Field data provides the information necessary to test the accuracy, consistency and sensitivity of predictions and to modify the knowledge base. Using field data as further input, modifications could be made to the knowledge base relationships until an acceptable level of prediction and the lowest possible level of ambiguity are achieved for each biogeoclimatic unit.

A validation accuracy assessment could also be carried out, where field plots considered to be identified correctly, are compared to the mapping predictions. The validation data set is comprised of a minimum of 30 samples that include the suite of map attributes used in the knowledge table and a known outcome (i.e. site series/ecosystem units and site modifiers identified). The knowledge base validation results are used to assess the quality of the knowledge base – how accurately it predicts previously classified ecosystem units.

Field surveys to gain an understanding of the ecology of the project area and to investigate the relationships among topographic features, soil texture, site moisture conditions and vegetation are strongly recommended as a way to improve the predictive modelling process. Field sampling could identify other biophysical attributes on the landscape that would help to differentiate between closely related ecosystems occurring on similar sites thereby resolving some of the problem areas encountered during the initial classification and mapping of the park.

In the above context, it is recommended that field sampling should be conducted:

- to field verify of the PEM results;
- to improve the accuracy of the PEM;
- to improve the accuracy of the wildlife ratings; and,
- to collect attributes that can be used to model structural stage.

The field sampling will ensure 'ground truthing' of the preliminary species-habitat ratings so that the final PEM and species-habitat model (Species Account and Habitat Ratings) can be completed. This will require preparation of a detailed sampling plan. For efficiency, the sampling plan should address ecological sampling design in conjunction with habitat attribute sampling required to confirm/adjust habitat ratings and fill information gaps. At minimum, the sampling plan should include rationale for sampling plot selection, location of sampling plots and data capture and recording forms (RIC 1999).

Based on field sampling results, a final species-habitat model and wildlife report should be prepared that includes:

- summary of field sampling results and data analysis
- revised species account(s)
- revised preliminary ratings table(s)
- revised ratings assumptions and ratings adjustment factors
- final ratings table(s)
- assignment of a reliability factor of the species-habitat model(s) to ecosystem mapping

REFERENCES

Braumandl, T.F., and M.P. Curran. 1992. A field guide for site identification for the Nelson Forest Region. B.C. Ministry of Forests, Victoria, B.C.

Braumandl, T.F., Research Ecologist, Ministry of Forests, Nelson Forest Region. Nelson, B.C. (pers. comm.)

Kumar, L., Skidmore, A.K.,Knowles, E., (1997) Modeling Topographic variation in Solar Radiation in a GIS Environment. International Journal of Geographical Information Science, 11(5): 475-497

Meidinger, D., and J. Pojar. 1991. Ecosystems of British Columbia. Special Report Series 6, B.C. Ministry of Forests, Research Branch, Victoria, B.C.

Ministry of Forests and BC Environment. 1998. Field Manual for Describing Terrestrial Ecosystems. BC Ministry of Forests and BC Ministry of Environment, Lands and Parks, Victoria, B.C.

Resources Inventory Committee. 1999. British Columbia Wildlife Habitat Ratings Standards. Ministry of Environment, Lands and Parks, Resources Inventory Branch, Victoria, B.C.

Resources Inventory Committee. 1999. Standards for Predictive Ecosystem Mapping. Inventory Standard. Terrestrial Ecosystem Mapping Alternatives Task Force, Victoria, B.C.

APPENDIX A

Species Account for Mountain Caribou

SPECIES DATA

Scientific Name: *Rangifer tarandus caribou*

Species Code: M-RATA

Status: Red-listed (BC Conservation Data Centre, 2000)

IDENTIFIED WILDLIFE

Status: Currently under consideration as Identified Wildlife under Forest Practices Code (BC Ministry of Forests and Ministry of Environment, Lands and Parks)

COSEWIC Status: Designated as threatened in Canada (COSEWIC, 2000)

PROJECT DATA

Area: Purcell Wilderness Conservancy

Ecoprovince: Southern Interior Mountains

Ecoregions: Northern Columbia Mountains

Ecosections: Central Columbia Mountains and Eastern Purcell Mountains

Biogeoclimatic zones and variants: AT, ESSFdk, ESSFdkp, ESSFdku, ESSFwm, ESSFwmp, ESSFwmu, ICHdw, ICHmw2 and MSdk

Map Scale: 1:20,000

PROVINCIAL DISTRIBUTION

Two subspecies of caribou, Dawson's caribou (*R.t. dawsoni*) and woodland caribou (*R.t. caribou*), are currently recognized in British Columbia. Inhabitating only Graham Island on the Queen Charlotte Islands, Dawson's caribou is thought to have become extinct shortly after 1910. Wildlife biologists recognize two ecotypes of woodland caribou in B.C. (Paquet 1997). The terrestrial lichen feeding northern ecotype is found in the northern boreal forest and alpine tundra. The arboreal lichen feeding mountain ecotype is found in the more rugged mountainous forests of the Columbia and South Central Rocky Mountains. Southern interior areas important to caribou include the Purcell, Selkirk, Cariboo and Monashee Ranges, Wells Gray Park, Quesnel Highlands and the eastern slope of the Coast Mountains.

Elevational Range

Caribou in British Columbia occupy seasonal habitats from valley bottom to timberline/alpine. Elevational migrations are undertaken from season to season. These are described in more detail in the Ecology and Habitat Requirements section.

Distribution in Project Area

Historically, caribou occurred throughout the Purcell Wilderness Conservancy. Regular distribution is now limited to the southeastern corner of the conservancy, with occasional movements through the remainder of it, particular along the height-of-land.

ECOLOGY AND HABITAT REQUIREMENTS

Woodland caribou (*Rangifer tarandus caribou*) of British Columbia are broken into three (3) "ecotypes" - mountain, boreal and northern. Ecotypic differentiation is based on habitat use and behavior patterns. Northern and boreal ecotype caribou inhabit areas in which snow conditions commonly permit the use of terrestrial vegetation as winter forage. Mountain caribou inhabit areas where snowfall is heavier, and arboreal lichens are used as their primary winter forage (Heard and Vagt[1]). These areas include the moist coniferous forests of the Columbia and Rocky Mountains of southeast British Columbia and northern Idaho. Because their dependence on arboreal lichen and other aspects of their ecology, mountain caribou are assumed to depend on old forests, and may be susceptible to the loss of effective habitat through forest harvesting and displacement by human disturbance (Stevenson et al., 1994; Simpson et al., 1997).

The mountain caribou of southeastern BC spend most of the year in high elevation sub-alpine forest and alpine habitats, descending to lower elevation forests during critical early winter and spring periods (i.e., snow conditions, avalanche danger) (Simpson and Woods, 1987; Stevenson and Hatler, 1985). However, the early winter migration pattern of the southern Purcell caribou does not have as marked a downward shift in mean elevation as caribou in more rugged, higher snowfall regions more central to mountain caribou range (Antifeau, 1987; Seip, 1990). The pattern is more consistent with the early winter migration pattern found in areas of relatively subdued terrain at the northern and southern ends of the mountain caribou distribution (Kinley pers. comm.). Because of the climatic and physiographic conditions, Southern Purcell caribou may not be forced to low elevations by massive early winter snow accumulation (Kinley and Apps 2000).

Caribou inhabiting mountainous terrain, similar to that of the project area, generally use seasonal habitats within the full range of elevations from low-elevation cedar/hemlock (as is found in the west of the Conservancy) to mid and high elevation spruce/fir forests, including fir/spruce parkland habitats. Although the times of seasonal migrations and habitat use by caribou may vary between populations, four (4) seasonal habitat use patterns are generally recognized (Stevenson and Hatler, 1985; Simpson and Woods, 1987; McLellan et al., 1994). These four (4) periods are late winter, spring, summer/fall and early winter. USA research biologists have identified calving as a fifth seasonal habitat for the South Selkirk caribou population (Scott and Serhveen, 1985).

The breeding season is in late autumn with gestation averaging seven (7) to eight (8) months. Calves are born in late May to early June and a cow will average only six calves over her

[1] Heard and Vagt, 1998. Caribou in British Columbia: a 1996 status report; Rangifer Special Issue 10 p.117-123.

lifetime. Single births are most common. Calves are not camouflaged and must be able to travel with the cows almost immediately after birth (Hunter, 1972).

Winter snow depth and snow consolidation is an important factor as it influences caribou habitat use and seasonal migrations. Until the snow consolidates, or hardens, the caribou use low elevation habitats (early winter) where dense forest canopies reduce ground snow depths thereby affording the animals greater mobility and forage availability. By late winter, the snow has hardened to the extent that it facilitates 'on top of the snow migration' of the animals to higher elevation ESSF/ESSF parkland habitats, where the animals rely totally on arboreal lichens for food.

EARLY WINTER (NOVEMBER 1 TO JANUARY 15)

- Important period when ground-foraging, which may represent a preferred foraging strategy during early winter or a compromise because of low availability of arboreal lichen, can be energetically costly due to unconsolidated snow.
- Gentle to moderate slope ICH/ESSF ecotone, ESSF and ESSF/ESSF parkland ecotone.
- Selected habitats usually consisting of older age class (snow interception and thermal cover, reduce ground snow accumulations, old growth structural attributes), low shrubs (not tall shrubs or conifers) particularly V*accinium scoparium,* and herbs (e.g., *ligusticum canbyl* and *lithophragma parviflorum*).
- Particularly feed on *Vaccinium scoparium* and the terrestrial lichen *Cladonia* when snow is shallow, otherwise rely on arboreal lichens - especially lichen litterfall from standing trees and lichens on fallen or windthrown trees or branches.

LATE WINTER (JANUARY 16 TO APRIL 30)

- Migrated to higher elevation habitat with stronger preferences for older, larger trees, and with lower canopy closure and horizontal cover.
- High elevation mature to old growth ESSF and ESSF parkland habitats characterized by moderate slope, open canopies (20-50 percent crown closure), low basal area.
- Feed entirely on arboreal lichens (primarily *Bryoria* spp.) found on live and dead standing trees, blowdown and litterfall.

SPRING (MAY 1 TO JUNE 15)

- Migrate from higher elevation habitats to mid elevation or exposed, south-aspect high elevation snow-free habitats when snow conditions at higher elevations become restrictive to movement and access to arboreal lichens is reduced.
- In ICH/ESSF ecotone and ESSF stands with low canopy closure and similar in structure to those preferred during early and late winter.
- Exposed sites with early snowmelt and available green forage.
- Pregnant cows may again move from mid elevation habitats with easy mobility and food quality to food-limiting but predator-free higher elevation habitats for calving. Calving usually occurs in the ESSF or AT, at or near the snowline, in secluded areas in proximity with adequate security forest cover attributes.
- Forage includes arboreal lichens in snow covered habitats and new green vegetation in snow free habitats. Use of snow covered areas that support abundant lichen production is

important because vascular forage availability may be low due to ground snow cover but pregnant cow energy demand is high.

SUMMER/FALL (JUNE 16 TO OCTOBER 31)

- Use of ICH/ESSF zones and ESSF with larger, older trees with moderately open canopy, lower horizontal cover and less suspended coarse woody debris (to maximize their line-of sight).
- Forage includes a wide range of herbaceous green vegetation and shrubs including grasses, sedges, buds, lichens and flowering plants.

HABITAT USE – LIFE REQUISITES

The Purcell Mountains represent a transition between interior rainforest on the north and west and the drier Columbia River ecosystem on the east and south. Their topography is varied, ranging from subdued ridges to high ridges and mountains (Demarchi, 1996).

The Southern Purcell caribou project area encompassed only the drier, southeastern portion of the Purcell Wilderness Conservancy. Moister portions of the study area were outside of the Conservancy, in the southwestern Purcells. Because of this and the varied topography in the Conservancy, information presented in this species account includes caribou habitat information from the Southern Purcell caribou project as well as other southern interior caribou habitat projects (e.g., Selkirk, Central Columbia and Revelstoke).

Feeding requirements for Mountain caribou are tied closely to food availability and season.

FOOD

Early Winter

During early winter, caribou in the southern Purcells favour habitats with *Vaccinium scoparium* and the terrestrial lichen *Cladonia* (Kinley and Apps 2000). While caribou in other southern interior herds favour habitats with *Paxistima myrisinites* and *Pyrola* species (Servheen and Lyon, 1989; Simpson et al., 1997; Hamilton et al., 2000). As the snowpack increases, caribou shift their diet to arboreal lichen (*Alectoria spp. and Bryoria spp.*) from litterfall and on windthrow trees or branches (Simpson et. al., 1985; Antifeau, 1985; Rominger and Oldemeyer, 1989).

Late Winter

The movement of mountain caribou to late-winter habitat appears to occur when the snow pack deepens and consolidates, allowing easier movement and lifting the caribou to the lichen-bearing forest canopy (Scott and Servheen 1985, Simpson et al. 1985, Rominger and Oldemeyer 1989, Servheen and Lyon 1989). Windthrown trees and lichen litterfall are used when available, but the major source of arboreal lichen is standing trees, both dead and alive (Simpson et. al., 1985; Antifeau, 1987).

Spring

Areas used in spring had newly emergent green forage, which is important to recover weight loss from a winter long lichen diet and to prepare cows for the heavy demands of lactation when they move to food-deficient areas for calving (Scott and Servheen, 1985). Snow-covered calving areas typically support high lichen densities because vascular forage is not available (Scott and Servheen, 1985; Servheen and Lyon, 1989).

Summer/Fall

Summer/fall habitat use appears driven primarily by the availability of abundant forage. Forage includes a wide range of herbaceous green vegetation and shrubs including grasses, sedges, buds, lichens and flowering plants

SECURITY HABITAT

Security habitat provides predator avoidance for caribou. Caribou seem to prefer areas where they can see around them; there is evidence that they avoid areas where tall shrubs, conifers regeneration, or obstructions restrict visibility (Stevenson et al., 1994). Older forest habitats with little shrub cover or conifer regeneration on gentle to moderate slopes provide good security cover, as do open alpine areas. Caribou also migrate from lower elevation habitats to high elevation security habitats on late winter range and in calving areas.

THERMAL HABITAT

Thermal habitat allows caribou to expend less energy to maintain body temperature thus allowing allocation of conserved energy to growth and reproduction. Thermal cover is considered an important component of ungulate habitat. It has been defined as overstory vegetation that, for a given combination of solar radiation flux density, ambient air temperature, and wind speed, allows an animal to remain in its thermoneutral zone (air temperatures in which animals exist most comfortably) or minimize thermoregulatory costs (energetic costs of increased metabolism) (Demarchi and Bunnell, 1993). Energy is a limiting factor under adverse environmental conditions for many ungulates (Parker et al., 1984). In summer, increased metabolic costs associated with heat dissipation can translate into decreased summer weight gain while in winter, animals lacking sufficient energy reserves are more vulnerable to winter-spring mortality (Mautz, 1978).

RATINGS

There is a detailed level of knowledge of the habitat requirements of Mountain caribou in British Columbia to warrant a six-class rating scheme.

PROVINCIAL BENCHMARK

RATING SCHEME AND ASSUMPTIONS

Based on caribou telemetry and habitat studies of comparable populations within the Kootenay region, the six (6) class rating system for caribou reflects the species' high seasonal mobility and research knowledge about population distribution, migration patterns and seasonal habitat requirements. Although limited caribou population census data exists specific to the project area, extrapolation of present knowledge regarding caribou ecology and telemetry/habitat study results for other caribou sub-populations in the Kootenays is considered applicable and has been considered accordingly.

In the above context, the project area caribou population exhibits a relatively low population density (estimated at 20-30 caribou) in comparison to other populations in the region (Kinley and Apps, 2000). Seasonal and structural stage ratings for food and cover have been identified for four seasons (see above).

RATING SCHEME

A six-class rating scheme is used to delineate caribou habitat. A mini-workshop was held to derive the caribou habitat preliminary ratings. Participants included Dennis Hamilton (Nanuq Consulting, Nelson), Trevor Kinley (Sylvan Consulting, Invermere), John Bergenske (Skookumchuk), Rob Neil (MELP, Cranbrook) and Peter Holmes (MELP, Invermere).

RATING ASSUMPTIONS

Assumptions are listed in the following table for locations on the east slope, EPM ecosection (i.e., within the MSdk, ESSFdk, ESSFdku, ESSFdkp, AT gradient). Assumptions for the west slope (CCM) and upper St. Mary River area (SCM) are as developed for the Central Selkirks models.

In addition to the general schemes for placing site series in habitat classes according to structural stage, slope, vegetation and soil moisture regime, "exceptions" are listed for each season. If a polygon meets the criteria listed for an exception, then regardless of its other characteristics it falls within the class indicated. *Bryoria* is not included as a factor in the rating scheme because its abundance is assumed to directly correlate to structural stage, which is included as a factor. *Cladonia* is also not listed as a factor because early-winter foraging is assumed to be driven more directly by grouseberry than *Cladonia*; they typically occur in association with each other, and for site series in which only *Cladonia* is listed as occurring, it is not considered sufficient to affect the habitat rating. Given that this rating system is for the dry climatic region, Structural Stage 6 is assumed to represent forests of about 80 – 140 years, and is therefore not considered to represent old-growth.

Using the assumptions listed below generally resulted in the automatic assignment of individual site series/structural stage/modifier combinations to the appropriate class (See Table 7). However, there were some situations in which a site series exhibited a range of soil moisture regimes that might place it in either of two (2) classes. When it was clear from site series classifications that most polygons of that site series would fall in one (1) class, it was assigned to that class, and if not, it was assigned to what was subjectively deemed to be the most appropriate class. The PEM/TEM site series modifier scheme and GIS PEM modeling abilities presented several limitations to creating otherwise logical breaks in the classification. One of these was that Structural Stages 3a and 3b are potentially of dramatically differing values to caribou, as are earlier and later ages within Stage 6. However, these vegetative differences are not easily discernible in the PEM models, so were not considered. Another limitation was that the "w" modifier requires not only a warm aspect, but also a slope >25%. In spring, warm slopes are important predictors of habitat quality, but slopes with warm aspects having slopes of <25% are not identified with "w" modifiers, so the working definition of a warm slope for assigning habitat classes in spring required it to be >25%. Finally a logical break in higher versus lower quality habitats is often at about 50% slope. Because this point could not be identified readily through site series modifiers (which identify slope breaks of 25% and 100%), the distinction was made through a rating adjustment, as shown in Table 8.

Table 7: Structural Stages Rating Determination Table

FACTOR	CLASS 1	CLASS 2	CLASS 3	CLASS 4	CLASS 5	CLASS 6
			EARLY WINTER			
structural stg.	7	7,6	7,6	2,3,4,5	2,3,4,5,6,7	1
slope	<25	<100	<100	<100	>100	n/a
vegetation	grouseberry or falsebox listed	grouseberry or falsebox listed	grouseberry or falsebox not listed	n/a	n/a	n/a
moist. regime	subxeric or moister	subxeric or moister	subxeric or moister	subxeric or moister	n/a	n/a
exceptions	--	--	--	stage 6 but in MSdk	xeric	--
			LATE WINTER			
structural stg.	7	7	6	6,7	2,3,4,5	1
slope	<100	<100	<100	>100	n/a	n/a
vegetation	Pa or La listed	Pa or La not listed	n/a	n/a	n/a	n/a
exceptions	--	--	stage 7 but neither Bl nor Se listed	--	in MSdk	--
			SPRING			
structural stg.	7	2,6	2,6	2,6,7	3,4,5	1
slope	25-100	25-100	25-100	n/a	n/a	n/a
moist. regime	mesic to subhygric	mesic to subhygric	subxeric, submesic, hygric, subhydric	subxeric to subhydric	n/a	n/a
aspect modifier	w	w	w	not w (k, q, z or blank)	n/a	n/a
exceptions	--	stage 7 in ESSF+* but subxeric to submesic	stage 6,7 if in MSdk	--	xeric	--
			SUMMER			
structural stg.	7	7	2,6	2,6,7	3,4,5	1
slope	mesic to hygric	submesic	n/a	n/a	n/a	n/a
moist. regime	<100	<100	<100	>100	n/a	n/a
exceptions	--	--	--	stage 2,6,7 if in MSdk and always subxeric or moister	stage 2,6,7 if in MSdk and possibly xeric OR stage 2,6,7 if in ESSF+* and xeric	--

* ESSFdk, ESSFdku, ESSFdkp

Table 8: Rating Adjustments Table

Issue	Description	Rating Adjustment
Roads	Habitat within 250m of road	< 1 class
Fragmentation	>60% harvest (<age class 3) within 500ha area	< 2 classes
Inter-species competition		
Predation		
Slope	Slopes 50 to 100% for polygons listed as Class 1, 2, or 3	< 1 class
Adjacency	Structural stage 2 occurring within 250 m of a class 1 or class 2 early-winter or late-winter habitat	> 2 classes

REFERENCES

Antifeau, T.D. 1987. The significance of snow and arboreal lichens in the winter ecology of mountain caribou (*Rangifer tarandus caribou*) in the North Thompson watershed of British Columbia. M.Sc. Thesis, University of British Columbia, Vancouver, B.C., 142pp.

Apps, C., and T. Kinley. 1995. Preliminary Habitat Suitability Assessment for MountainCaribou in the Southern Purcell Mountains of BC. BC Environment, Lands and Parks and East Kootenay Environmental Society. Invermere, BC. 53pp.

B.C. Ministry of Forests and Ministry of Environment. 1997. Forest Practices Code Species and Plant Community Accounts for Identified Wildlife. B.C. Forest Service and B.C. Environment. 171p.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 1999. Internet web site: hhtp://www.cosewic.gc.ca/COSEWIC. Canadian Wildlife Service, Environment Canada.

Demarchi, D. A. 1996. Ecoregions of British Columbia. Ministry of Environment, Lands and Parks, Victoria, British Columbia, Canada.

Demarchi, M. W. and F. L. Bunnell. 1993. Estimating forest canopy effects on summer thermal cover for Cerviae (deer family). Canadian Journal of Zoology 23: 2419-2426.

Hamilton, D.L. 1997. Billings/Bennett Creeks Caribou Project: Phase I: Literature Review. Ministry of Forests, Arrow Forest District. Castlegar, BC. 21 pp.

Hamilton D. L., S.F. Wilson, and G. Smith. 2000. Mountain Caribou Habitat Use and Population Characteristics for the Central Selkirks Caribou Inventory Project. Pope and Talbot Ltd., Nakusp, B.C., Meadow Creek Cedar, Cooper Creek, B.C., Slocan Forest Products Ltd., Slocan, B.C., and BC Environment, Lands and Parks, Nelson, B.C.

Hunter, T. 1972. British Columbia's Natural History: Caribou… Wildlife Review; Vol 3, Spring 1972. BC Dept. of Recreation and Conservation, Victoria, BC.

Kinley, T. Personal communication. Sylan Consulting Ltd., Invermere, B.C.

Kinley, T. and C. D. Apps. 2000. Stand-level Selection for Forest Attributes by Mountain Caribou in the Southern Purcell Mountains, British Columbia. East Kootenay Environmental Society, Kimberley, B.C., and Crestbrook Forest Industries, Cranbrook, B.C.

Mautz, W. W. 1978. Nutrition and carrying capacity. *In* Big game of North American: ecology and management. *Edited* by J. L. Schmidt and D. L. Gilbert. Stackpole Books, Harrisburg, Penn.

McLellan, B., J. Flaa and J. Woods. 1994. Mountain Caribou Censuses in the North Columbia Mountains. Ministry of Forests, Research Branch, Revelstoke, BC. 26pp.

McTaggart-Cowan, I. and C. J. Guiguet. 1965. Mammals of British Columbia. Queen Printer's, Victoria, B.C.

Nagorsen, D.W. 1990. Mammals of British Columbia: A taxonomic catalogue. Royal British Columbia Museum Memoir – Series 4. Royal British Columbia Museum, Victoria, B.C. 140pp.

Paquet, M. 1997. Toward a Mountain Caribou Management Strategy for British Columbia. Background Report. BC Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, B.C.

Parker, K. L., C. T. Robbins, and T. A. Hanley. 1984. Energy expenditure for locomotion by mule deer and elk. J. Wildl. Manage. 48: 474-488.

Rominger, E.M. and J.L. Oldemeyer. 1989 Early-winter diet of woodland caribou in relation to snow accumulation, Selkirk Mountains, British Columbia, Canada. Can. J. Zool. 68:2691-2694.

Scott, M. D., and G. Servheen. 1985. Caribou Ecology. Job Comp. Rpt. Proj. No. W-160-R-11. Idaho Department of Fish and Game, Boise, Idaho. 136pp.

Seip, D. R. 1990. Ecology of woodland caribou in Wells Gray Provincial Park. B. C. Ministry of Environment Wildlife Bulletin B-68.

Servheen, G. and L.J. Lyon. 1989. Habitat use by woodland caribou in the Selkirk Mountains. J. Wildl. Manage. 53:230-237

Simpson, K., and G.P.Woods. 1987. Movements and Habitats of Caribou in theMountains of Southern British Columbia. BC Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, B.C. Bulletin No. B-57. 36pp.

Simpson, K., G.P. Woods and K.B. Hebert. 1985. Critical habitats of caribou in the mountains of southern B.C. B.C. Min. of Environ., Widl. Rep. No. WR-23

Simpson, K., E. Terry and D. Hamilton. 1997. Toward a Mountain CaribouManagement Strategy for British Columbia – Habitat Requirements and Sub-population Status. Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, B.C. Wildlife Working Report No. WR-90. 29pp.

Stevenson, S.K., and D.F. Hatler. 1985. Woodland Caribou and Their Habitat in Southern And Central British Columbia. Volumes 1 and 2. Land Management Report Number 23. BC Ministry of Forests. Victoria, BC. 354pp.

Stevenson et al. 1994. Mountain caribou in managed forests: preliminary recommendations for managers. Minist. For., Research Branch ISBN 0-7726-2212-4. Victoria. 33 pp.

APPENDIX B

Species Account for Grizzly Bear

SPECIES DATA

Scientific Name: *Ursus arctos*

Species Code: M-URAR

Status: Blue-Listed (BC Conservation Data Centre)

IDENTIFIED WILDLIFE

Status: Currently under consideration as Identified Wildlife under Forest Practices Code (BC Ministry of Forests and Ministry of Environment, Lands and Parks)

COSEWIC Status: Designated as vulnerable in Canada (COSEWIC,1991)

PROJECT DATA

Area: Purcell Wilderness Conservancy

Ecoprovince: Southern Interior Mountains

Ecoregions: Purcell Mountains

Ecosections: Central Columbia Mountains, Southern Columbia Mountains and Eastern Purcell Mountains

Biogeoclimatic zones: ICH, ESSF, AT

Map Scale: 1:20,000

PROVINCIAL DISTRIBUTION

Provincial Range

Grizzly bears inhabit most of British Columbia except Vancouver Island, the Queen Charlotte Islands and smaller coastal islands. In portions of the south and south-central interior (e.g., lower elevations of the Okanagan, the lower mainland and parts of the Caribou) they have been extirpated. In the Southern Interior Ecoprovince, population viability is a concern. The provincial population estimate is 6000-7000 grizzly bears.

Distribution in Project Area

Grizzlies are expected to occur at some time during the year within all of the ecoregions, ecosections, and biogeoclimatic zone, subzone, and variant combinations found within the Purcell Wilderness Conservancy Park.

Elevational Range

Occupies seasonal habitats from valley bottom riparian to alpine tundra.

ECOLOGY AND HABITAT REQUIREMENTS

Grizzly bears use a wide range of approaches and behavioral adaptations to meeting their seasonal life requirements. Home range size may vary by sex, age and reproductive status of the animal as well as the proportional distribution, quality and availability of habitat (particularly food and denning requirements). The food requirements vary seasonally and with local climatic conditions, but generally include a wide variety of herbaceous vegetation, roots, sedges, grasses, forbs, insects, carrion, fish, berries, and small and large mammals. In this context, grizzly bear habitat requirements vary widely and should be considered over both spatial and temporal scales.

In spring, grizzly bears in the northern Kootenays are usually found in low elevation valley bottom riparian areas, wet meadows, wetlands and south aspect avalanche chutes where early snow-free 'greened-up' vegetation is available. This may include roots, glacial lilies, spring beauty, angelica and cow parsnip. During summer and fall, grizzlies prefer open areas and inhabit the sub-alpine forests and alpine tundra habitats. During the living season, habitat use is determined largely by food availability (T. Hamilton, pers. comm.).

Reproduction rates are low among grizzlies, because first age of reproduction ranges from age four (4) upwards, litters are usually born at three (3) year intervals and litter sizes ranging from one (1) to four (4) cubs (BC MOF & MELP, 1997). Mating occurs from late June to early July. The gestation period is between 230 and 270 days. Cubs are born to the sow in dormancy some time between mid-January and March (BC MOF & MELP, 1997).

Grizzlies usually den high in the mountains in the shelter of caves, hollow trees, tree wells, beneath windfalls or excavated cavities. The dormant period is roughly from mid-November to emergence in April.

KEY HABITAT REQUIREMENTS AND ATTRIBUTES

Spring

- ICH and lower ESSF subzones, especially wet meadows, wetlands, riparian areas and the lower slopes of avalanche tracks.
- Upon emergence, grizzlies seek out snow free areas to forage on newly emerged green-up foliage (i.e., glacier lily, spring beauty, cow parsnip, succulent forbs and roots). They also seek food in areas with 'diggable' soil and slab rocks.
- During this period, the bears will also consume carcasses of winter-killed animals and may prey on winter weakened animals.

Summer

- Upper ESSF, ESSF parkland and AT.
- In early summer, they will often migrate up with the retreating snow line foraging on new growth.

- In late summer, berries are sought (huckleberry, salmonberry, elderberry, thimbleberry). The key being berry production.
- Insects, fungi, roots, fruits, berries and small and large mammals may also be consumed during this period.

Fall

- ICH and ESSF wet sites.
- May migrate to low/mid elevations in search of berries to put on additional fat reserves critical to over-winter survival.
- Denning sites are sought in late fall in natural dens (caves, cavities) where available. Grizzlies will excavate their own dens. Soils must be deep enough to facilitate digging and steeper slopes are preferred. Preference is shown for places where topography and wind currents allow a blanket of snow to collect and remain all winter.

Winter

- Dormant period.

HABITAT USE – LIFE REQUISITES

Within the Purcell Wilderness Conservancy Park, no specific grizzly bear habitat studies have occurred. In 1998, a grizzly bear hair-capture DNA assessment was conducted in the Central Purcell Mountains for BC Environment's Assessment Office and the Jumbo Glacier Development proponent (Strom et al., 1999). The resulting population estimate for the study area (which included 1299 km² of the Purcell Wilderness Conservancy) was 37 to 68 bears (Boulanger, 1999; Strom et al., 1999).

The information presented in the species account has been extrapolated from studies of grizzly bear habitat selection that are ecologically relevant to the Kootenay Region of B.C., because there is little documentation of grizzly habitat associations for the Purcell Wilderness Conservancy. Interviews were also conducted with Bruce McLellan (MoF, Revelstoke) , Tony Hamilton (MELP, Victoria) and John Flaa (Parks Canada, Revelstoke).

Grizzly bears are opportunistic omnivores and utilize many different food resources, they also utilize many different types of habitat. As omnivores, grizzly have a diverse diet, including vegetation, berries, carrion, small and large mammals, fish, and insects. Table 9 illustrates some important food-plants of grizzly bear.

FOOD HABITAT

Spring

Riparian areas, avalanche chutes and low elevation productive forests are important spring habitats for grizzly (Simpson et al., 1985, Servheen, 1983). These habitats are free of snow earlier than high elevation habitats and are generally productive in terms of forbs, sedges, grasses, horsetail, and roots (bulbs and corms), which make up the majority of the spring diet (Simpson et al., 1985; Servheen, 1983; McLellan and Hovey, 1995). Adult and neonate ungulates are also an important food source following den emergence, when food is generally scarce (McLellan and Hovey, 1995).

Table 9: Some important food-plants of the Grizzly Bear

Spring	Summer	Fall
Forbs	Forbs	Vaccinium spp.
Grasses	Grasses	Soapberry
sedges	sedges	Grasses
horsetails	horsetails	sedges
Hedysarum spp.	Vaccinium spp.	horsetail
Cow parsnip	Soapberry, chokecherry	

Summer

The use of forbs, horsetails, and grasses decreases as summer progresses and the use of berries (e.g., huckleberries, soapberries) increases (Servheen, 1983; Simpson et al., 1985; McLellan and Hovey, 1995). As the snowline recedes, grizzlies move up in elevation during the summer season. Natural burns, open forests and other open canopy habitats (e.g., meadows) that provide berries are the most important summer habitat (Waller and Mace, 1997; Simpson et al., 1985). Avalanche chutes and moist areas within forests that provide herbaceous food species may continue to be used (Simpson et al., 1985).

Fall

In the fall season, natural burns, sub-alpine, alpine and avalanche chutes are important habitats. Grizzly bear diet in the fall season is generally more varied than in the summer, and this is reflected in the wider spectrum of habitats used in this season. Berries were found to be the dominant food item in the fall but roots (e.g., *Hedysarum*), grasses and sedges were also eaten (McLellan and Hovey, 1995; Simpson et al., 1985).

RATINGS

A four-class rating scheme for two active feeding seasons (spring and summer/fall) and security cover for grizzly bears is used.

RATING SCHEME AND ASSUMPTIONS

Provincial Benchmark

The provincial standard (best in BC) for the interior grizzly bear is the Border Ranges Ecosection (BBR) in southeastern B.C.

Ratings

A mini-workshop was conducted to derive the habitat ratings. Participants included Dennis Hamilton (Nanuq Consulting, Nelson), Bruce McLellan (MoF, Revelstoke), John Flaa (Parks Canada, Revelstoke), Peter Holmes (MELP, Invermere) and Rob Neil (MELP, Cranbrook). No rating for the dormant (denning) season is provided as information on identification of specific denning sites and site attributes is limited.

The overall ratings reflect the level of existing research, knowledge, distribution and seasonal habitat use patterns of Grizzly bears in the project area. Workshop pariticipants determined that a four is rated as non-habitat. Avalanche chutes are rated up to class 1. Riparian areas and alpine habitats are rated class 1 or 2 for feeding and sites supporting important forage species (see above) are rated class 1 to 3. Tree species, structural stage and percent forest cover are considered in assigning cover ratings.

REFERENCES

Apps, C. 1997. Identification of Grizzly Bear Linkage Zones along the Highway 3 Corridor of Southeastern British Columbia and Southwest Alberta. BC Ministry of Environment, Lands and Parks and World Wildlife Fund Canada. 40pp.

B.C. Ministry of Forests and Ministry of Environment. 1997. Forest Practices Code Species and Plant Community Accounts for Identified Wildlife. B.C. Forest Service and B.C. Environment. 171p.

BC Government. 1995. Conservation of Grizzly Bears in British Columbia, Background Report. Ministry of Environment, Lands and Parks. Victoria, BC. 70 pp.

Boulanger, J. 1999. A review of population estimation procedures used for the 1998 central Purcell Mountain grizzly bear survey. Integrated Ecological Research, Nelson, B.C.

Committee on the Status of Endangered Wildlife in Canada (COSEWIC). 1999. Internet web site: hhtp://www.cosewic.gc.ca/COSEWIC. Canadian Wildlife Service, Environment Canada.

Hamilton, T.A. pers. comm. Large Carnivore Specialist, Wildlife Branch, Ministry of Environment, Lands and Parks. Victoria, B.C.

McLellan, B.N. 1990. Relationships Between Human Industrial Activity and Grizzly

Bears. International Conference on Bear Research and Management. 8:57-64.

McLellan, B.N., Hovey F.W. 1995. The diet of grizzly bears in the Flathead River drainage of southeastern British Columbia. Canadian Journal of Zoology 73:704-12.

Servheen, C. 1983. Girzzly bear food habits, movements, and habitat selection in the Mission Mountains, Montana. Journal of Wildlife Management 47(4):1026-35.

Simpson, K, Hebert KB, Woods GP. 1985. Habitats and management of the grizzly bear in the Columbia mountains of British Columbia. Fish and Wildlife Bulletin, B. C. Ministry of Environment B-35.

Servheen, C. 1990. The Status and Conservation of the Bears of the World. Eighth International Conference on Bear Research and Management. Mongraph Series No. 2 32pp. Strom, K., Proctor, M., and J. Boulanger. 1999. Grizzly bear population survey in the central Purcell mountains, British Columbia. AXYS Environmental Consulting Ltd., Calgary, AB.

Waller, J.S., Mace R.D. 1997. Grizzly bear habitat selection in the Swan Mountains, Montana. Journal of Wildlife Management 64(4):1032-40.

Woods, G. 1996. Kootenay grizzly bear operational management plan. Draft. Ministry of Environment, Lands and Parks, Nelson, BC.

APPENDIX C

Species Account for Least Chipmunk

SPECIES DATA

Scientific Name: *Tamias minimus selkirki*

Species Code: M-TAMI-SE

Status: Red-listed subspecies (threatened or endangered in British Columbia)

INFORMATION GAPS

Very little is known regarding the ecology of the Selkirk least chipmunk and this lack of knowledge is reflected in this species account. Preliminary habitat information presented here is based primarily on the collection of 14 individuals from three proximal sites (Nagorsen and Fraker 1999). Aspects of the Selkirk least chipmunk's diet, reproduction, hibernation ecology are basically unknown but some inferences are made here using the better-studied Flathead least chipmunk (*T. minimus oreocetes*), which is found in similar habitats in the Rocky Mountains (Meredith 1975, Sheppard 1969, 1971, 1972).

IDENTIFIED WILDLIFE

Status:

COSEWIC Status:

PROJECT DATA

Area: Purcell Wilderness Conservancy

Ecoprovince: Southern Interior Mountains

Ecoregions: Northern Columbia Mountains

Ecosections: Central Columbia Mountains, Southern Columbia Mountains and Eastern Purcell Mountains

Biogeoclimatic zones: AT; ESSFdk; ESSFwm; ICHdw; ICHmw2; MSdk

Map Scale: 1:20,000

PROVINCIAL DISTRIBUTION

Provincial Range

The Selkirk least chipmunk has been collected only in the following subalpine locations: Paradise Mine, Spring Creek drainage; Mt. Brewer; and Bruce Creek (Mark Fraker, pers. comm.). All sites are on the eastern slopes of the Purcell Mountains. The site closest to the Purcell Wilderness Conservancy is approximately 6 km outside the northeastern boundary of the park. The taxon was absent from similar habitat at Lead Queen Mountain, and therefore may have a very restricted range. There has been no small mammal inventory completed within the Purcell Wilderness Conservancy, and the overall range of *Tamias minimus selkirki* is unknown. It should be noted that this taxon is not known from the Selkirk Mountains.

Elevational Range

The Selkirk least chipmunk has been collected from 2,134m to 2,380m.

Provincial Context

Known from only three (3) local sites in the Purcell Mountains of southeastern British Columbia. Four (4) of the 21 recognized subspecies of *T. minimus* occur in British Columbia (Verts and Leslie, 2001). The other red-listed least chipmunk subspecies (*T. m. oreocetes*) occurs in alpine habitat of the Rocky Mountains in southeastern British Columbia. This subspecies has been studies than *T. m. Selkirki*, particularly on the Alberta side of the Rocky Mountains (Nagorsen, pers. comm.).

ECOLOGY AND HABITAT REQUIREMENTS

GENERAL

The Selkirk least chipmunk occurs in vegetated alpine and semi-forested (parkland) sub-alpine areas. It is strongly associated with areas near talus and or krummholz (Nagorsen and Fraker 1999), which is thought to provide cover protection from predators and weather (Meredith 1975). At the lowest elevational range of its occurrence (ESSFdkp), the Selkirk least chipmunk co-occurs with the yellow-pine chipmunk (*T. amoenus*). In the Rocky Mountains, the more aggressive *T. amoenus* (which occurs from the valley bottoms to the lower edges of the alpine) is thought to competitively exclude *T. minimus* from lower elevation habitats (Sheppard 1971). A similar relationship between *T. minimus* and *T. amoenus* also likely exists in the Purcells, where they are the only two chipmunk species co-occurring at higher elevations.

Least chipmunks construct burrow systems, with the entrances often concealed under large rocks (Bihr and Smith, 1998). Cowan and Guiget (1978) report the diet of the least chipmunk as consisting of berries, seeds and occasionally insects and other animals. Verts and Carraway (2001) confirm that seeds make up the majority of the diet of alpine-dwelling least chipmunks, with arthropods, leaves, fruits, flowers, and fungi making up the remainder. Seeds are cached below ground in burrows. Alpine least chipmunks emerge from hibernation mid to late May (Sheppard, 1969), and a yearly litter averaging 4.5 is born in mid to late June. Prior to entering hibernation in September, food is collected and stored in burrows for use throughout the winter as the chipmunks enter and exit torpor.

In Alberta, home range sizes for *T. m. oreocetes* averaged 0.66 ha for females and 1.22 ha for males (Sheppard, 1972). *T. m. selkirki* likely has comparable home range sizes.

Within their known range, Selkirk least chipmunks have been collected on flat to vertical sites, and on all aspects except north (Nagorsen and Fraker, 1999). It is thought that this reflects a preference for dryer sites, which have lower snow accumulations and therefore longer active seasons for the chipmunks (Mark Fraker, pers. comm.).

HABITAT USE AND LIFE REQUISITES

LIVING

The life requisite that will be rated for the Selkirk Least Chipmunk is ***Living LI-G [living-growing (spring, summer, fall)]***, which is met by the presence of suitable feeding, security/breeding habitats, as described in detail below.

FEEDING HABITAT

T. m. selkirki probably eats mainly seeds and to a lesser extent, arthropods, leaves, fruits, flowers, and fungi. It is unknown what plant species are required for food, but proximity to appropriate cover substrate (especially talus or rubble) is likely an important component of the chipmunk's foraging habitat.

SECURITY/BREEDING HABITAT

Physical complexity of the environment (talus, rubble and to a lesser extent, krummholz) appears to be an important life requisite for Selkirk least chipmunks, which provides protection from predators (Mark Fraker, pers. comm.) and inclement weather.

SEASONS OF USE

The Selkirk least chipmunk is a year round residents of the project area. In summer, they are closely associated with a high degree of physical complexity in their environment, which provides shelter and cover for foraging, resting, and other activities. The chipmunks hibernate, or enter torpor, for the winter in burrows - presumably in the same habitat, but the differences between winter and growing season habitats are not sufficiently known to rate them separately. Therefore, only one all-season rating will be used. Table 10 summarizes the life requisites for each month of the year.

Table 10: Selkirk least chipmunk life requisites for each month

LIFE REQUISITE	MONTH	SEASON*	LIFE REQUISITE	MONTH	SEASON*
Hibernating	January	All (Winter)	Living	July	All (Growing)
Hibernating	February	All (Winter)	Living	August	All (Growing)
Hibernating	March	All (Winter)	Hibernating/Living	September	All (Growing/Winter)
Hibernating	April	All (Winter)	Hibernating	October	All (Winter)
Hibernating/Living	May	All (Growing/Winter)	Hibernating	November	All (Winter)
Living	June	All (Growing)	Hibernating	December	All (Winter)

*Season definitions differ from those defined in Appendix B of the BC Habitat Ratings Standards manual (Ministry of Environment, Lands and Parks 1999) because the Selkirk Least Chipmunk is restricted to high-elevation habitat within the project area.

HABITAT USE AND ECOSYSTEM ATTRIBUTES

Table 11 outlines how the Living Habitat (feeding, security) life requisite relates to broad and specific ecosystem attributes. The relationships are either positive or negative and a subjective rank was assigned indicating the relative strength of each relationship.

Table 11: Selkirk least chipmunk-habitat relationships

ATTRIBUTE	DESCRIPTION	RELATIONSHIP	RANK	MAP LAYER
Alpine parkland	Non-ice, vegetated, alpine tundra, near talus	+	high	BEC (Atp)
Subalpine parkland	Subalpine-alpine transition areas, open, sparsely forested	+	high	BEC (ESSFdkp)
Elevation	2134m to 23380m	+	high	BEC
Dry to moist sites	Areas of lower snow accumulation	+	medium	TEM
Aspect	North facing slopes	-	medium	TEM (k & q site modifiers)
Ice	Permanent ice (glacier)	-	high	TEM (GS ecosystem code modifier)
Coarse Rocky Substrate (CRS)	Large and small diameter talus, rubble, exposed bedrock with fissures and debris	+	high	TEM (TA ecosystem code modifier)
Prostrate woody vegetation (LWV)	Krummholz and other stunted growth	+	medium	none
Coarse woody debris (CWD)	Mine waste lumber etc.	+	low	none

RATING SCHEME AND ASSUMPTIONS

RATING SCHEME

Because there is a relatively low level of knowledge regarding the habitat requirements of the Selkirk least chipmunk, only a two-class rating scheme will be used. Potential habitat is given the following ratings: U= likely useable habitat; X=likely no habitat value.

PROVINCIAL BENCHMARK

A provincial benchmark has not been established for this taxon.

RATINGS ASSUMPTIONS

Capability and suitability are essentially the same for this taxon because its alpine habitat is not subject to changes over time due to natural events (i.e., forest succession, fire cycles, or anthropegenic disturbances). Although the Selkirk least chipmunk has not been found on the west slopes of the Purcells (Central Purcell Mountains Ecosection), the ratings tables and resulting map include this area as possible habitat. It should be noted that Biogeoclimatic

Ecosystem Classification (BEC) may not be the most appropriate system to describe the habitat of *T. m. selkirki* because BEC is a forest-driven model and this chipmunk lives primarily above or at the timber line. However, until more habitat data is collected, we have used TEM/BEC descriptors in the habitat ratings tables in accordance with RIC standards (Ministry of Environment, Lands and Parks, 1999).

RATINGS ADJUSTMENT CONSIDERATIONS

Final habitat capability and suitability map products will incorporate habitat associations determined from future chipmunk sampling within the Purcell Wilderness Conservancy and surrounding area. This taxon has been very poorly sampled and any additional efforts in this area will greatly increase knowledge of habitat requirements.

REFERENCES

Antifeau, T. Personal communication. Ministry of Environment, Lands and Parks, Nelson, BC.

Bihr, K.J. and R.J. Smith. 1998. Location, structure, and contents of burrows of *Spermophilus lateralis* and *Tamias minimus*, two ground-dwelling sciurids. The Southwestern Naturalist 43: 352-362.

Cannings, S.G., Ramsay, L.R., Fraser, D.F. and M.A. Fraker. 1999. Rare amphibians, reptiles and mammals of British Columbia. Ministry of Environment, Lands and Parks. Wildlife Branch and Resources Inventory Branch. Victoria, BC.

Fraker, M. Personal communication.

Hamilton, D. Personal communication. Nanuq Consulting Ltd., Nelson, BC.

Krebs, J. Personal communication. Columbia Basin Fish & Wildlife Compensation Program, Nelson, BC.

McKenzie, E. Personal communication.

Meredith, D. H. (1974). Long distance movements of two species of chipmunks (*Eutamias*) in southern Alberta. Journal of Mammalogy 55, 466-469.

Meredith, D. H. 1976. Habitat selection by two parapatric species of chipmunks (*Eutamias*). Canadian Journal of Zoology 54, 536-543.

Ministry of Environment, Lands and Parks. 1998. Standards for Terrestrial Ecosystem Mapping in British Columbia.. Resource Inventory Committee, Victoria.

Ministry of Environment, Lands and Parks. 1999. British Columbia wildlife habitat ratings standards. Resource Inventory Committee, Victoria.

Nagorsen, D. Personal communication.

Nagorsen, D.W. and M.A. Fraker. 1999. Chipmunks (*Tamias*) of the Kootenay Region, British Columbia: results of 1997 field studies. Prepared for Columbia Basin Fish and Wildlife Compensation Program, Nelson, BC.

Parfitt, I. Personal communication. Columbia Basin Fish & Wildlife Compensation Program, Nelson, BC.

Sheppard, D. H. 1969. A comparison of reproduction in two chipmunk species (*Eutamias*). Canadian Journal of Zoology 47, 603-608.

Sheppard, D. H. 1971. Competition between two chipmunk species (*Eutamias*). Ecology 52, 320-329.

Sheppard, D. H. 1972. Home ranges of chipmunks (*Eutamias*) in Alberta. Journal of Mammalogy 53, 379-380.

Verts, B.J. and L.N. Carraway. 2001. *Tamias minimus*. Mammalian Species 653: 1-10.

Smith, G. Personal communication. GeoSense Consulting Ltd., Nelson, BC.

APPENDIX D

Habitat Ratings for Mountain Caribou

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	At	AW				2		4	5	4	3
CCM	At	AW		k		2		4	5	4	3
CCM	At	AW		w		2		4	5	3	3
CCM	At	BP				2		4	5	4	3
CCM	At	GS				1		6	6	6	6
CCM	At	GS		k		1		6	6	6	6
CCM	At	GS		q		1		6	6	6	6
CCM	At	GS		w		1		6	6	6	6
CCM	At	GS		z		1		6	6	6	6
CCM	At	MN				1		6	6	6	6
CCM	At	MN		k		1		6	6	6	6
CCM	At	MN		q		1		6	6	6	6
CCM	At	MN		w		1		6	6	6	6
CCM	At	MN		z		1		6	6	6	6
CCM	At	RO						6	5	5	6
CCM	At	RO		k				6	5	5	6
CCM	At	RO		q				6	6	6	6
CCM	At	RO		w				6	5	5	6
CCM	At	RO		z				6	6	6	6
CCM	At	SL				2		5	5	5	5
CCM	At	SL		k		2		5	5	5	5
CCM	At	SL		q		2		5	5	5	5
CCM	At	SL		w		2		5	5	5	5
CCM	At	SL		z		2		5	5	5	5
CCM	At	TA						6	5	5	6
CCM	At	TA		k				6	5	5	6
CCM	At	TA		q				6	6	6	6
CCM	At	TA		w				6	5	5	6
CCM	At	TA		z				6	6	6	6
CCM	ESSFwm	AC	77					5	5	2	2
CCM	ESSFwm	AC	77	k				5	5	3	1
CCM	ESSFwm	AC	77	q				5	5	4	3
CCM	ESSFwm	AC	77	w				5	5	3	4
CCM	ESSFwm	AC	77	z				5	5	4	5
CCM	ESSFwm	AR	75			2		4	5	4	3
CCM	ESSFwm	AR	75			3		4	5	5	5
CCM	ESSFwm	AR	75	k		2		4	5	4	3
CCM	ESSFwm	AR	75	k		3		4	5	5	5
CCM	ESSFwm	AR	75	q		2		5	5	4	4
CCM	ESSFwm	AR	75	q		3		5	5	5	5
CCM	ESSFwm	AR	75	w		2		4	5	2	3
CCM	ESSFwm	AR	75	w		3		4	5	5	5
CCM	ESSFwm	AR	75	z		2		5	5	4	4
CCM	ESSFwm	AR	75	z		3		5	5	5	5
CCM	ESSFwm	FA				2		4	5	4	3
CCM	ESSFwm	FA				3		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwm	FA				4		4	5	5	5
CCM	ESSFwm	FA				5		4	5	5	5
CCM	ESSFwm	FA				6		3	3	4	3
CCM	ESSFwm	FA				7		1	2	4	1
CCM	ESSFwm	FA		k		2		4	5	4	3
CCM	ESSFwm	FA		k		3		4	5	5	5
CCM	ESSFwm	FA		k		4		4	5	5	5
CCM	ESSFwm	FA		k		5		4	5	5	5
CCM	ESSFwm	FA		k		6		3	3	4	3
CCM	ESSFwm	FA		k		7		2	2	4	1
CCM	ESSFwm	FA		w		2		4	5	3	3
CCM	ESSFwm	FA		w		3		4	5	5	5
CCM	ESSFwm	FA		w		4		4	5	5	5
CCM	ESSFwm	FA		w		5		4	5	5	5
CCM	ESSFwm	FA		w		6		3	3	2	3
CCM	ESSFwm	FA		w		7		2	2	1	1
CCM	ESSFwm	FG	02			2		5	5	5	5
CCM	ESSFwm	FG	02			3		5	5	5	5
CCM	ESSFwm	FG	02			4		5	5	5	5
CCM	ESSFwm	FG	02			5		5	5	5	5
CCM	ESSFwm	FG	02			6		5	5	5	5
CCM	ESSFwm	FG	02			7		5	5	5	5
CCM	ESSFwm	FG	02	k		2		4	5	4	3
CCM	ESSFwm	FG	02	k		3		4	5	5	5
CCM	ESSFwm	FG	02	k		4		4	5	5	5
CCM	ESSFwm	FG	02	k		5		4	5	5	5
CCM	ESSFwm	FG	02	k		6		2	3	4	3
CCM	ESSFwm	FG	02	k		7		1	2	4	2
CCM	ESSFwm	FG	02	q		2		5	5	5	5
CCM	ESSFwm	FG	02	q		3		5	5	5	5
CCM	ESSFwm	FG	02	q		4		5	5	5	5
CCM	ESSFwm	FG	02	q		5		5	5	5	5
CCM	ESSFwm	FG	02	q		6		5	4	4	4
CCM	ESSFwm	FG	02	q		7		5	4	4	4
CCM	ESSFwm	FG	02	w		2		4	5	4	3
CCM	ESSFwm	FG	02	w		3		4	5	5	5
CCM	ESSFwm	FG	02	w		4		4	5	5	5
CCM	ESSFwm	FG	02	w		5		4	5	5	5
CCM	ESSFwm	FG	02	w		6		2	3	4	3
CCM	ESSFwm	FG	02	w		7		1	2	4	2
CCM	ESSFwm	FG	02	z		2		5	5	5	5
CCM	ESSFwm	FG	02	z		3		5	5	5	5
CCM	ESSFwm	FG	02	z		4		5	5	5	5
CCM	ESSFwm	FG	02	z		5		5	5	5	5
CCM	ESSFwm	FG	02	z		6		5	4	4	4
CCM	ESSFwm	FG	02	z		7		5	4	4	4
CCM	ESSFwm	FH	04					5	5	3	3
CCM	ESSFwm	FQ				2		4	5	4	3
CCM	ESSFwm	FQ				3		4	5	5	5
CCM	ESSFwm	FQ				4		4	5	5	5
CCM	ESSFwm	FQ				5		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwm	FQ				6		2	3	4	3
CCM	ESSFwm	FQ				7		2	2	4	2
CCM	ESSFwm	FQ		k		2		4	5	4	3
CCM	ESSFwm	FQ		k		3		4	5	5	5
CCM	ESSFwm	FQ		k		4		4	5	5	5
CCM	ESSFwm	FQ		k		5		4	5	5	5
CCM	ESSFwm	FQ		k		6		2	3	4	3
CCM	ESSFwm	FQ		k		7		2	2	4	2
CCM	ESSFwm	FQ		q		2		5	5	4	4
CCM	ESSFwm	FQ		q		3		5	5	5	5
CCM	ESSFwm	FQ		q		4		5	5	5	5
CCM	ESSFwm	FQ		q		5		5	5	5	5
CCM	ESSFwm	FQ		q		6		5	4	4	4
CCM	ESSFwm	FQ		q		7		5	4	4	4
CCM	ESSFwm	FQ		w		2		4	5	3	3
CCM	ESSFwm	FQ		w		3		4	5	5	5
CCM	ESSFwm	FQ		w		4		4	5	5	5
CCM	ESSFwm	FQ		w		5		4	5	5	5
CCM	ESSFwm	FQ		w		6		2	3	3	3
CCM	ESSFwm	FQ		w		7		2	2	3	2
CCM	ESSFwm	FR				2		5	5	5	5
CCM	ESSFwm	FR				3		5	5	5	5
CCM	ESSFwm	FR				4		5	5	5	5
CCM	ESSFwm	FR				5		5	5	5	5
CCM	ESSFwm	FR				6		3	2	4	5
CCM	ESSFwm	FR				7		3	2	4	5
CCM	ESSFwm	FR		k		2		5	5	5	5
CCM	ESSFwm	FR		k		3		5	5	5	5
CCM	ESSFwm	FR		k		4		5	5	5	5
CCM	ESSFwm	FR		k		5		5	5	5	5
CCM	ESSFwm	FR		k		6		3	2	4	5
CCM	ESSFwm	FR		k		7		3	2	4	5
CCM	ESSFwm	FR		q		2		5	5	5	5
CCM	ESSFwm	FR		q		3		5	5	5	5
CCM	ESSFwm	FR		q		4		5	5	5	5
CCM	ESSFwm	FR		q		5		5	5	5	5
CCM	ESSFwm	FR		q		6		5	5	4	4
CCM	ESSFwm	FR		q		7		5	5	4	4
CCM	ESSFwm	FR		w		2		5	5	5	5
CCM	ESSFwm	FR		w		3		5	5	5	5
CCM	ESSFwm	FR		w		4		5	5	5	5
CCM	ESSFwm	FR		w		5		5	5	5	5
CCM	ESSFwm	FR		w		6		3	2	4	5
CCM	ESSFwm	FR		w		7		3	2	4	5
CCM	ESSFwm	FR		z		2		5	5	5	5
CCM	ESSFwm	FR		z		3		5	5	5	5
CCM	ESSFwm	FR		z		4		5	5	5	5
CCM	ESSFwm	FR		z		5		5	5	5	5
CCM	ESSFwm	FR		z		6		5	5	4	4
CCM	ESSFwm	FR		z		7		5	5	4	4
CCM	ESSFwm	RA				2		5	5	4	4

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwm	RA				3		5	5	4	4
CCM	ESSFwm	RA				4		5	5	5	5
CCM	ESSFwm	RA				5		5	5	5	5
CCM	ESSFwm	RA				6		3	4	4	4
CCM	ESSFwm	RA				7		3	4	4	4
CCM	ESSFwm	RA		k		2		5	5	4	4
CCM	ESSFwm	RA		k		3		5	5	4	4
CCM	ESSFwm	RA		k		4		5	5	5	5
CCM	ESSFwm	RA		k		5		5	5	5	5
CCM	ESSFwm	RA		k		6		3	4	4	4
CCM	ESSFwm	RA		k		7		3	4	4	4
CCM	ESSFwm	RA		w		2		5	5	4	4
CCM	ESSFwm	RA		w		3		5	5	4	4
CCM	ESSFwm	RA		w		4		5	5	5	5
CCM	ESSFwm	RA		w		5		5	5	5	5
CCM	ESSFwm	RA		w		6		3	4	4	4
CCM	ESSFwm	RA		w		7		3	4	4	4
CCM	ESSFwm	RO	99					5	5	5	5
CCM	ESSFwm	RO	99	k				5	5	5	5
CCM	ESSFwm	RO	99	q				6	6	6	6
CCM	ESSFwm	RO	99	w				5	5	5	5
CCM	ESSFwm	RO	99	z				6	6	6	6
CCM	ESSFwm	SM	66					4	5	4	3
CCM	ESSFwm	SM	66	k				4	5	4	3
CCM	ESSFwm	SM	66	w				4	5	3	3
CCM	ESSFwm	TA	44					5	5	5	5
CCM	ESSFwm	TA	44	k				5	5	5	5
CCM	ESSFwm	TA	44	q				5	5	5	5
CCM	ESSFwm	TA	44	w				5	5	5	5
CCM	ESSFwm	TA	44	z				5	5	5	5
CCM	ESSFwmp	AC						5	5	4	4
CCM	ESSFwmp	AC		k				5	5	4	2
CCM	ESSFwmp	AC		q				5	5	5	4
CCM	ESSFwmp	AC		w				5	5	4	3
CCM	ESSFwmp	AC		z				5	5	5	5
CCM	ESSFwmp	AR						4	5	4	3
CCM	ESSFwmp	AR		k				4	5	4	3
CCM	ESSFwmp	AR		q				5	5	4	4
CCM	ESSFwmp	AR		w				4	5	3	3
CCM	ESSFwmp	AR		z				5	5	5	4
CCM	ESSFwmp	FA				2		4	5	5	3
CCM	ESSFwmp	FA				3		4	5	5	5
CCM	ESSFwmp	FA				4		4	5	5	5
CCM	ESSFwmp	FA				5		4	5	5	5
CCM	ESSFwmp	FA				6		4	3	4	3
CCM	ESSFwmp	FA				7		4	2	4	2
CCM	ESSFwmp	FA		k		2		4	5	5	3
CCM	ESSFwmp	FA		k		3		4	5	5	5
CCM	ESSFwmp	FA		k		4		4	5	5	5
CCM	ESSFwmp	FA		k		5		4	5	5	5
CCM	ESSFwmp	FA		k		6		4	3	4	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwmp	FA		k		7		4	2	4	2
CCM	ESSFwmp	FA		q		2		5	5	5	3
CCM	ESSFwmp	FA		q		3		5	5	5	5
CCM	ESSFwmp	FA		q		4		5	5	5	5
CCM	ESSFwmp	FA		q		5		5	5	5	5
CCM	ESSFwmp	FA		q		6		5	4	5	4
CCM	ESSFwmp	FA		q		7		5	4	5	4
CCM	ESSFwmp	FA		w		2		4	5	5	3
CCM	ESSFwmp	FA		w		3		4	5	5	5
CCM	ESSFwmp	FA		w		4		4	5	5	5
CCM	ESSFwmp	FA		w		5		4	5	5	5
CCM	ESSFwmp	FA		w		6		4	3	4	3
CCM	ESSFwmp	FA		w		7		4	2	4	2
CCM	ESSFwmp	FA		z		2		5	5	5	4
CCM	ESSFwmp	FA		z		3		5	5	5	5
CCM	ESSFwmp	FA		z		4		5	5	5	5
CCM	ESSFwmp	FA		z		5		5	5	5	5
CCM	ESSFwmp	FA		z		6		5	4	5	4
CCM	ESSFwmp	FA		z		7		5	4	5	4
CCM	ESSFwmp	FM				2		4	5	5	3
CCM	ESSFwmp	FM				3		4	5	5	5
CCM	ESSFwmp	FM				4		4	5	5	5
CCM	ESSFwmp	FM				5		4	5	5	5
CCM	ESSFwmp	FM				6		4	3	4	3
CCM	ESSFwmp	FM				7		4	2	4	2
CCM	ESSFwmp	FM		k		2		4	5	5	3
CCM	ESSFwmp	FM		k		3		4	5	5	5
CCM	ESSFwmp	FM		k		4		4	5	5	5
CCM	ESSFwmp	FM		k		5		4	5	5	5
CCM	ESSFwmp	FM		k		6		4	3	4	3
CCM	ESSFwmp	FM		k		7		4	2	4	2
CCM	ESSFwmp	FM		q		2		5	5	5	3
CCM	ESSFwmp	FM		q		3		5	5	5	5
CCM	ESSFwmp	FM		q		4		5	5	5	5
CCM	ESSFwmp	FM		q		5		5	5	5	5
CCM	ESSFwmp	FM		q		6		5	4	5	4
CCM	ESSFwmp	FM		q		7		5	4	5	4
CCM	ESSFwmp	FM		w		2		4	5	5	3
CCM	ESSFwmp	FM		w		3		4	5	5	5
CCM	ESSFwmp	FM		w		4		4	5	5	5
CCM	ESSFwmp	FM		w		5		4	5	5	5
CCM	ESSFwmp	FM		w		6		4	3	4	3
CCM	ESSFwmp	FM		w		7		4	2	4	2
CCM	ESSFwmp	FM		z		2		5	5	5	4
CCM	ESSFwmp	FM		z		3		5	5	5	5
CCM	ESSFwmp	FM		z		4		5	5	5	5
CCM	ESSFwmp	FM		z		5		5	5	5	5
CCM	ESSFwmp	FM		z		6		5	4	5	4
CCM	ESSFwmp	FM		z		7		5	4	5	4
CCM	ESSFwmp	FS				2		4	5	5	3
CCM	ESSFwmp	FS				3		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwmp	FS				4		4	5	5	5
CCM	ESSFwmp	FS				5		4	5	5	5
CCM	ESSFwmp	FS				6		4	3	4	3
CCM	ESSFwmp	FS				7		4	2	4	2
CCM	ESSFwmp	FS		k		2		4	5	5	3
CCM	ESSFwmp	FS		k		3		4	5	5	5
CCM	ESSFwmp	FS		k		4		4	5	5	5
CCM	ESSFwmp	FS		k		5		4	5	5	5
CCM	ESSFwmp	FS		k		6		4	3	4	3
CCM	ESSFwmp	FS		k		7		4	2	4	2
CCM	ESSFwmp	FS		q		2		5	5	5	3
CCM	ESSFwmp	FS		q		3		5	5	5	5
CCM	ESSFwmp	FS		q		4		5	5	5	5
CCM	ESSFwmp	FS		q		5		5	5	5	5
CCM	ESSFwmp	FS		q		6		5	4	5	4
CCM	ESSFwmp	FS		q		7		5	4	5	4
CCM	ESSFwmp	FS		w		2		4	5	5	3
CCM	ESSFwmp	FS		w		3		4	5	5	5
CCM	ESSFwmp	FS		w		4		4	5	5	5
CCM	ESSFwmp	FS		w		5		4	5	5	5
CCM	ESSFwmp	FS		w		6		4	3	4	3
CCM	ESSFwmp	FS		w		7		4	2	4	2
CCM	ESSFwmp	FS		z		2		5	5	5	4
CCM	ESSFwmp	FS		z		3		5	5	5	5
CCM	ESSFwmp	FS		z		4		5	5	5	5
CCM	ESSFwmp	FS		z		5		5	5	5	5
CCM	ESSFwmp	FS		z		6		5	4	5	4
CCM	ESSFwmp	FS		z		7		5	4	5	4
CCM	ESSFwmp	GS						6	6	6	6
CCM	ESSFwmp	GS		k				6	6	6	6
CCM	ESSFwmp	GS		q				6	6	6	6
CCM	ESSFwmp	GS		w				6	6	6	6
CCM	ESSFwmp	GS		z				6	6	6	6
CCM	ESSFwmp	MN						6	6	6	6
CCM	ESSFwmp	MN		k				6	6	6	6
CCM	ESSFwmp	MN		q				6	6	6	6
CCM	ESSFwmp	MN		w				6	6	6	6
CCM	ESSFwmp	MN		z				6	6	6	6
CCM	ESSFwmp	RO						5	5	5	5
CCM	ESSFwmp	RO		k				5	5	5	5
CCM	ESSFwmp	RO		q				6	6	6	6
CCM	ESSFwmp	RO		w				5	5	5	5
CCM	ESSFwmp	RO		z				6	6	6	6
CCM	ESSFwmp	TA						5	5	5	5
CCM	ESSFwmp	TA		k				5	5	5	5
CCM	ESSFwmp	TA		q				5	5	5	5
CCM	ESSFwmp	TA		w				5	5	5	5
CCM	ESSFwmp	TA		z				5	5	5	5
CCM	ESSFwmu	AC	77					5	5	2	2
CCM	ESSFwmu	AC	77	k				5	5	3	1
CCM	ESSFwmu	AC	77	q				5	5	4	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwmu	AC	77	w				5	5	3	4
CCM	ESSFwmu	AC	77	z				5	5	4	5
CCM	ESSFwmu	AR	75			2		4	5	4	3
CCM	ESSFwmu	AR	75			3		4	5	5	5
CCM	ESSFwmu	AR	75	k		2		4	5	4	3
CCM	ESSFwmu	AR	75	k		3		4	5	5	5
CCM	ESSFwmu	AR	75	q		2		5	5	4	4
CCM	ESSFwmu	AR	75	q		3		5	5	5	5
CCM	ESSFwmu	AR	75	w		2		4	5	2	3
CCM	ESSFwmu	AR	75	w		3		4	5	5	5
CCM	ESSFwmu	AR	75	z		2		5	5	4	4
CCM	ESSFwmu	AR	75	z		3		5	5	5	5
CCM	ESSFwmu	FB				2		4	5	4	3
CCM	ESSFwmu	FB				3		4	5	5	5
CCM	ESSFwmu	FB				4		4	5	5	5
CCM	ESSFwmu	FB				5		4	5	5	5
CCM	ESSFwmu	FB				6		3	3	4	3
CCM	ESSFwmu	FB				7		1	2	4	1
CCM	ESSFwmu	FB		k		2		4	5	4	3
CCM	ESSFwmu	FB		k		3		4	5	5	5
CCM	ESSFwmu	FB		k		4		4	5	5	5
CCM	ESSFwmu	FB		k		5		4	5	5	5
CCM	ESSFwmu	FB		k		6		3	3	4	3
CCM	ESSFwmu	FB		k		7		2	2	4	1
CCM	ESSFwmu	FB		w		2		4	5	3	3
CCM	ESSFwmu	FB		w		3		4	5	5	5
CCM	ESSFwmu	FB		w		4		4	5	5	5
CCM	ESSFwmu	FB		w		5		4	5	5	5
CCM	ESSFwmu	FB		w		6		3	3	2	3
CCM	ESSFwmu	FR				2		4	5	4	3
CCM	ESSFwmu	FR				3		4	5	5	5
CCM	ESSFwmu	FR				4		4	5	5	5
CCM	ESSFwmu	FR				5		4	5	5	5
CCM	ESSFwmu	FR				6		3	3	4	3
CCM	ESSFwmu	FR				7		1	2	4	1
CCM	ESSFwmu	FR		k		2		4	5	4	3
CCM	ESSFwmu	FR		k		3		4	5	5	5
CCM	ESSFwmu	FR		k		4		4	5	5	5
CCM	ESSFwmu	FR		k		5		4	5	5	5
CCM	ESSFwmu	FR		k		6		3	3	4	3
CCM	ESSFwmu	FR		k		7		2	2	4	1
CCM	ESSFwmu	FR		w		2		4	5	3	3
CCM	ESSFwmu	FR		w		3		4	5	5	5
CCM	ESSFwmu	FR		w		4		4	5	5	5
CCM	ESSFwmu	FR		w		5		4	5	5	5
CCM	ESSFwmu	FR		w		6		3	3	2	3
CCM	ESSFwmu	GS	88					6	6	6	6
CCM	ESSFwmu	GS	88	k				6	6	6	6
CCM	ESSFwmu	GS	88	q				6	6	6	6
CCM	ESSFwmu	GS	88	w				6	6	6	6
CCM	ESSFwmu	MN						6	6	6	6

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwmu	MN		k				6	6	6	6
CCM	ESSFwmu	MN		q				6	6	6	6
CCM	ESSFwmu	MN		w				6	6	6	6
CCM	ESSFwmu	RO	99					5	5	5	5
CCM	ESSFwmu	RO	99	k				5	5	5	5
CCM	ESSFwmu	RO	99	q				6	6	6	6
CCM	ESSFwmu	RO	99	w				5	5	5	5
CCM	ESSFwmu	RO	99	z				6	6	6	6
CCM	ESSFwmu	TA	44					5	5	5	5
CCM	ESSFwmu	TA	44	k				5	5	5	5
CCM	ESSFwmu	TA	44	q				5	5	5	5
CCM	ESSFwmu	TA	44	w				5	5	5	5
CCM	ESSFwmu	TA	44	z				5	5	5	5
CCM	ESSFwmu	WE	06			2		5	5	3	3
CCM	ESSFwmu	WE	06			3		5	5	3	3
CCM	ESSFwmu	WE	06	k		3		5	5	3	3
CCM	ESSFwmu	WE	06	k		2		5	5	3	3
CCM	ESSFwmu	WH	02			2		4	5	4	3
CCM	ESSFwmu	WH	02			3		4	5	5	5
CCM	ESSFwmu	WH	02			4		4	5	5	5
CCM	ESSFwmu	WH	02			5		4	5	5	5
CCM	ESSFwmu	WH	02			6		3	3	5	5
CCM	ESSFwmu	WH	02			7		3	2	5	5
CCM	ESSFwmu	WH	02	k		2		4	5	4	3
CCM	ESSFwmu	WH	02	k		3		4	5	5	5
CCM	ESSFwmu	WH	02	k		4		4	5	5	5
CCM	ESSFwmu	WH	02	k		5		4	5	5	5
CCM	ESSFwmu	WH	02	k		6		3	3	5	5
CCM	ESSFwmu	WH	02	k		7		3	2	5	5
CCM	ESSFwmu	WH	02	q		2		4	5	5	5
CCM	ESSFwmu	WH	02	q		3		4	5	5	5
CCM	ESSFwmu	WH	02	q		4		4	5	5	5
CCM	ESSFwmu	WH	02	q		5		4	5	5	5
CCM	ESSFwmu	WH	02	q		6		4	4	5	5
CCM	ESSFwmu	WH	02	q		7		4	4	5	5
CCM	ESSFwmu	WH	02	w		2		4	5	4	3
CCM	ESSFwmu	WH	02	w		3		4	5	5	5
CCM	ESSFwmu	WH	02	w		4		4	5	5	5
CCM	ESSFwmu	WH	02	w		5		4	5	5	5
CCM	ESSFwmu	WH	02	w		6		3	3	5	5
CCM	ESSFwmu	WH	02	w		7		3	2	5	5
CCM	ESSFwmu	WH	02	z		2		4	5	5	5
CCM	ESSFwmu	WH	02	z		3		4	5	5	5
CCM	ESSFwmu	WH	02	z		4		4	5	5	5
CCM	ESSFwmu	WH	02	z		5		4	5	5	5
CCM	ESSFwmu	WH	02	z		6		4	4	5	5
CCM	ESSFwmu	WH	02	z		7		4	4	5	5
CCM	ESSFwmu	WS	08			2		4	5	3	3
CCM	ESSFwmu	WS	08			3		4	5	3	3
CCM	ESSFwmu	WS	08	q		2		5	5	4	4
CCM	ESSFwmu	WS	08	q		3		5	5	4	4

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ESSFwmu	WS	08	z		2		5	5	4	4
CCM	ESSFwmu	WS	08	z		3		5	5	4	4
CCM	ICHdw	AC	77	k				5	5	1	1
CCM	ICHdw	AC	77	q				5	5	2	2
CCM	ICHdw	AC	77	w				5	5	1	1
CCM	ICHdw	AR						5	5	1	2
CCM	ICHdw	AR		k				5	5	1	2
CCM	ICHdw	AR		q				5	5	2	2
CCM	ICHdw	AR		w				5	5	1	2
CCM	ICHdw	AR		z				5	5	2	2
CCM	ICHdw	DO	02					5	5	5	5
CCM	ICHdw	DO	02	k				5	5	5	5
CCM	ICHdw	DO	02	q				5	5	5	5
CCM	ICHdw	DO	02	w				5	5	5	5
CCM	ICHdw	DO	02	z				5	5	5	5
CCM	ICHdw	HD	03			2		5	6	4	5
CCM	ICHdw	HD	03			3		5	6	5	5
CCM	ICHdw	HD	03			4		5	6	5	5
CCM	ICHdw	HD	03			5		5	6	5	5
CCM	ICHdw	HD	03			6		3	5	4	5
CCM	ICHdw	HD	03			7		3	5	4	5
CCM	ICHdw	HD	03			2		5	6	4	5
CCM	ICHdw	HD	03			3		5	6	5	5
CCM	ICHdw	HD	03			4		5	6	5	5
CCM	ICHdw	HD	03			5		5	6	5	5
CCM	ICHdw	HD	03			6		3	5	4	5
CCM	ICHdw	HD	03			7		3	5	4	5
CCM	ICHdw	HD	03	k		2		5	6	4	5
CCM	ICHdw	HD	03	k		3		5	6	5	5
CCM	ICHdw	HD	03	k		4		5	6	5	5
CCM	ICHdw	HD	03	k		5		5	6	5	5
CCM	ICHdw	HD	03	k		6		3	5	4	5
CCM	ICHdw	HD	03	k		7		3	5	4	5
CCM	ICHdw	HD	03	w		2		5	6	4	5
CCM	ICHdw	HD	03	w		3		5	6	5	5
CCM	ICHdw	HD	03	w		4		5	6	5	5
CCM	ICHdw	HD	03	w		5		5	6	5	5
CCM	ICHdw	HD	03	w		6		3	5	4	5
CCM	ICHdw	HD	03	w		7		3	5	4	5
CCM	ICHdw	RFA	01a			2		5	5	5	5
CCM	ICHdw	RFA	01a			3		5	5	5	5
CCM	ICHdw	RFA	01a			4		5	5	5	5
CCM	ICHdw	RFA	01a			5		5	5	5	5
CCM	ICHdw	RFA	01a			6		3	5	5	5
CCM	ICHdw	RFA	01a			7		3	5	5	5
CCM	ICHdw	RFA	01a	k		2		5	5	5	5
CCM	ICHdw	RFA	01a	k		3		5	5	5	5
CCM	ICHdw	RFA	01a	k		4		5	5	5	5
CCM	ICHdw	RFA	01a	k		5		5	5	5	5
CCM	ICHdw	RFA	01a	k		6		3	5	5	5
CCM	ICHdw	RFA	01a	k		7		3	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ICHdw	RFA	01a	w		2		5	5	5	5
CCM	ICHdw	RFA	01a	w		3		5	5	5	5
CCM	ICHdw	RFA	01a	w		4		5	5	5	5
CCM	ICHdw	RFA	01a	w		5		5	5	5	5
CCM	ICHdw	RFA	01a	w		6		3	5	5	5
CCM	ICHdw	RFA	01a	w		7		3	5	5	5
CCM	ICHdw	RFB	01b			2		5	5	5	5
CCM	ICHdw	RFB	01b			3		5	5	5	5
CCM	ICHdw	RFB	01b			4		5	5	5	5
CCM	ICHdw	RFB	01b			5		5	5	5	5
CCM	ICHdw	RFB	01b			6		3	5	5	5
CCM	ICHdw	RFB	01b			7		3	5	5	5
CCM	ICHdw	RFB	01b	k		2		5	5	5	5
CCM	ICHdw	RFB	01b	k		3		5	5	5	5
CCM	ICHdw	RFB	01b	k		4		5	5	5	5
CCM	ICHdw	RFB	01b	k		5		5	5	5	5
CCM	ICHdw	RFB	01b	k		6		3	5	5	5
CCM	ICHdw	RFB	01b	k		7		3	5	5	5
CCM	ICHdw	RFB	01b	q		2		5	5	5	5
CCM	ICHdw	RFB	01b	q		3		5	5	5	5
CCM	ICHdw	RFB	01b	q		4		5	5	5	5
CCM	ICHdw	RFB	01b	q		5		5	5	5	5
CCM	ICHdw	RFB	01b	q		6		4	5	5	5
CCM	ICHdw	RFB	01b	q		7		4	5	5	5
CCM	ICHdw	RFB	01b	w		2		5	5	5	5
CCM	ICHdw	RFB	01b	w		3		5	5	5	5
CCM	ICHdw	RFB	01b	w		4		5	5	5	5
CCM	ICHdw	RFB	01b	w		5		5	5	5	5
CCM	ICHdw	RFB	01b	w		6		3	5	5	5
CCM	ICHdw	RFB	01b	w		7		3	5	5	5
CCM	ICHdw	RO	99					5	5	5	5
CCM	ICHdw	RO	99	k				5	5	5	5
CCM	ICHdw	RO	99	q				5	5	5	5
CCM	ICHdw	RO	99	w				5	5	5	5
CCM	ICHdw	RO	99	z				5	5	5	5
CCM	ICHdw	TA	44					5	5	5	5
CCM	ICHdw	TA	44	k				5	5	5	5
CCM	ICHdw	TA	44	q				5	5	5	5
CCM	ICHdw	TA	44	w				5	5	5	5
CCM	ICHdw	TA	44	z				5	5	5	5
CCM	ICHdw	WS	66					4	5	5	5
CCM	ICHdw	WS	66	k				4	5	5	5
CCM	ICHmw2	AC	77	k				5	5	1	1
CCM	ICHmw2	AC	77	q				5	5	2	2
CCM	ICHmw2	AC	77	w				5	5	1	1
CCM	ICHmw2	AC	77	z				5	5	2	2
CCM	ICHmw2	AR						4	5	1	2
CCM	ICHmw2	AR		k				4	5	1	2
CCM	ICHmw2	AR		q				4	5	2	3
CCM	ICHmw2	AR		w				4	5	1	2
CCM	ICHmw2	AR		z				4	5	2	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ICHmw2	BS	09			2		5	5	4	4
CCM	ICHmw2	BS	09			3		5	5	4	4
CCM	ICHmw2	BS	09			4		5	5	5	5
CCM	ICHmw2	BS	09			5		5	5	5	5
CCM	ICHmw2	BS	09			6		4	5	4	4
CCM	ICHmw2	BS	09			7		4	5	4	4
CCM	ICHmw2	BS	09	k		2		5	5	4	4
CCM	ICHmw2	BS	09	k		3		5	5	4	4
CCM	ICHmw2	BS	09	k		4		5	5	5	5
CCM	ICHmw2	BS	09	k		5		5	5	5	5
CCM	ICHmw2	BS	09	k		6		4	5	4	4
CCM	ICHmw2	BS	09	k		7		4	5	4	4
CCM	ICHmw2	CS	08					4	5	3	5
CCM	ICHmw2	DF	03			2		3	5	3	4
CCM	ICHmw2	DF	03			3		3	5	3	4
CCM	ICHmw2	DF	03			4		4	5	4	4
CCM	ICHmw2	DF	03			5		4	5	4	4
CCM	ICHmw2	DF	03			6		3	4	3	3
CCM	ICHmw2	DF	03			7		2	3	2	3
CCM	ICHmw2	DF	03	k		2		3	5	3	4
CCM	ICHmw2	DF	03	k		3		3	5	3	4
CCM	ICHmw2	DF	03	k		4		4	5	4	4
CCM	ICHmw2	DF	03	k		5		4	5	4	4
CCM	ICHmw2	DF	03	k		6		3	4	3	3
CCM	ICHmw2	DF	03	k		7		2	3	2	3
CCM	ICHmw2	DF	03	q		2		3	5	3	4
CCM	ICHmw2	DF	03	q		3		3	5	3	4
CCM	ICHmw2	DF	03	q		4		4	5	4	4
CCM	ICHmw2	DF	03	q		5		4	5	4	4
CCM	ICHmw2	DF	03	q		6		3	4	3	4
CCM	ICHmw2	DF	03	q		7		2	3	2	4
CCM	ICHmw2	DF	03	w		2		3	5	3	4
CCM	ICHmw2	DF	03	w		3		3	5	3	4
CCM	ICHmw2	DF	03	w		4		4	5	4	4
CCM	ICHmw2	DF	03	w		5		4	5	4	4
CCM	ICHmw2	DF	03	w		6		3	4	3	3
CCM	ICHmw2	DF	03	w		7		2	3	2	3
CCM	ICHmw2	DF	03	z		2		3	5	3	4
CCM	ICHmw2	DF	03	z		3		3	5	3	4
CCM	ICHmw2	DF	03	z		4		4	5	4	4
CCM	ICHmw2	DF	03	z		5		4	5	4	4
CCM	ICHmw2	DF	03	z		6		3	4	3	4
CCM	ICHmw2	DF	03	z		7		2	3	2	4
CCM	ICHmw2	HF	01			2		4	5	4	2
CCM	ICHmw2	HF	01			3		4	5	4	2
CCM	ICHmw2	HF	01			4		4	5	4	4
CCM	ICHmw2	HF	01			5		4	5	4	4
CCM	ICHmw2	HF	01			6		1	4	2	2
CCM	ICHmw2	HF	01			7		1	4	2	2
CCM	ICHmw2	HF	01	k		2		4	5	4	2
CCM	ICHmw2	HF	01	k		3		4	5	4	2

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ICHmw2	HF	01	k		4		4	5	4	4
CCM	ICHmw2	HF	01	k		5		4	5	4	4
CCM	ICHmw2	HF	01	k		6		2	4	2	2
CCM	ICHmw2	HF	01	k		7		2	4	2	2
CCM	ICHmw2	HF	01	w		2		4	5	4	2
CCM	ICHmw2	HF	01	w		3		4	5	4	2
CCM	ICHmw2	HF	01	w		4		4	5	4	4
CCM	ICHmw2	HF	01	w		5		4	5	4	4
CCM	ICHmw2	HF	01	w		6		2	4	2	2
CCM	ICHmw2	HF	01	w		7		2	4	2	2
CCM	ICHmw2	HO	05			2		4	5	2	2
CCM	ICHmw2	HO	05			3		4	5	3	3
CCM	ICHmw2	HO	05			4		5	5	4	4
CCM	ICHmw2	HO	05			5		5	5	5	4
CCM	ICHmw2	HO	05			6		2	3	2	2
CCM	ICHmw2	HO	05			7		2	3	2	2
CCM	ICHmw2	HO	05	k		2		4	5	2	2
CCM	ICHmw2	HO	05	k		3		4	5	3	3
CCM	ICHmw2	HO	05	k		4		5	5	4	4
CCM	ICHmw2	HO	05	k		5		5	5	5	4
CCM	ICHmw2	HO	05	k		6		2	3	2	2
CCM	ICHmw2	HO	05	k		7		2	3	2	2
CCM	ICHmw2	HO	05	q		2		4	5	3	3
CCM	ICHmw2	HO	05	q		3		4	5	3	3
CCM	ICHmw2	HO	05	q		4		5	5	4	4
CCM	ICHmw2	HO	05	q		5		5	5	5	4
CCM	ICHmw2	HO	05	q		6		3	4	3	4
CCM	ICHmw2	HO	05	q		7		3	4	3	3
CCM	ICHmw2	HO	05	w		2		4	5	2	2
CCM	ICHmw2	HO	05	w		3		4	5	3	3
CCM	ICHmw2	HO	05	w		4		5	5	4	4
CCM	ICHmw2	HO	05	w		5		5	5	5	4
CCM	ICHmw2	HO	05	w		6		2	3	2	2
CCM	ICHmw2	HO	05	w		7		2	3	2	2
CCM	ICHmw2	HO	05	z		2		4	5	3	3
CCM	ICHmw2	HO	05	z		3		4	5	3	3
CCM	ICHmw2	HO	05	z		4		5	5	4	4
CCM	ICHmw2	HO	05	z		5		5	5	5	4
CCM	ICHmw2	HO	05	z		6		3	4	3	4
CCM	ICHmw2	HO	05	z		7		3	4	3	3
CCM	ICHmw2	RC	02			2		5	5	5	5
CCM	ICHmw2	RC	02			3		5	5	5	5
CCM	ICHmw2	RC	02			4		5	5	5	5
CCM	ICHmw2	RC	02			5		5	5	5	5
CCM	ICHmw2	RC	02			6		4	4	5	5
CCM	ICHmw2	RC	02			7		4	4	5	5
CCM	ICHmw2	RC	02	k		2		5	5	5	5
CCM	ICHmw2	RC	02	k		3		5	5	5	5
CCM	ICHmw2	RC	02	k		4		5	5	5	5
CCM	ICHmw2	RC	02	k		5		5	5	5	5
CCM	ICHmw2	RC	02	k		6		4	4	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ICHmw2	RC	02	k		7		4	4	5	5
CCM	ICHmw2	RC	02	q		2		5	5	5	5
CCM	ICHmw2	RC	02	q		3		5	5	5	5
CCM	ICHmw2	RC	02	q		4		5	5	5	5
CCM	ICHmw2	RC	02	q		5		5	5	5	5
CCM	ICHmw2	RC	02	q		6		5	5	5	5
CCM	ICHmw2	RC	02	q		7		5	5	5	5
CCM	ICHmw2	RC	02	w		2		5	5	5	5
CCM	ICHmw2	RC	02	w		3		5	5	5	5
CCM	ICHmw2	RC	02	w		4		5	5	5	5
CCM	ICHmw2	RC	02	w		5		5	5	5	5
CCM	ICHmw2	RC	02	w		6		4	4	5	5
CCM	ICHmw2	RC	02	w		7		4	4	5	5
CCM	ICHmw2	RC	02	z		2		5	5	5	5
CCM	ICHmw2	RC	02	z		3		5	5	5	5
CCM	ICHmw2	RC	02	z		4		5	5	5	5
CCM	ICHmw2	RC	02	z		5		5	5	5	5
CCM	ICHmw2	RC	02	z		6		5	5	5	5
CCM	ICHmw2	RC	02	z		7		5	5	5	5
CCM	ICHmw2	RD	06			2		4	5	3	3
CCM	ICHmw2	RD	06			3		4	5	3	3
CCM	ICHmw2	RD	06			4		5	5	4	4
CCM	ICHmw2	RD	06			5		5	5	5	4
CCM	ICHmw2	RD	06			6		2	3	3	3
CCM	ICHmw2	RD	06			7		2	3	3	3
CCM	ICHmw2	RF	04			2		3	5	3	4
CCM	ICHmw2	RF	04			3		3	5	3	4
CCM	ICHmw2	RF	04			4		4	5	4	4
CCM	ICHmw2	RF	04			5		4	5	4	4
CCM	ICHmw2	RF	04			6		3	4	3	3
CCM	ICHmw2	RF	04			7		2	3	2	3
CCM	ICHmw2	RF	04	k		2		3	5	3	4
CCM	ICHmw2	RF	04	k		3		3	5	3	4
CCM	ICHmw2	RF	04	k		4		4	5	4	4
CCM	ICHmw2	RF	04	k		5		4	5	4	4
CCM	ICHmw2	RF	04	k		6		3	4	3	3
CCM	ICHmw2	RF	04	k		7		2	3	2	3
CCM	ICHmw2	RF	04	q		2		3	5	3	4
CCM	ICHmw2	RF	04	q		3		3	5	3	4
CCM	ICHmw2	RF	04	q		4		4	5	4	4
CCM	ICHmw2	RF	04	q		5		4	5	4	4
CCM	ICHmw2	RF	04	q		6		3	4	3	4
CCM	ICHmw2	RF	04	q		7		3	3	3	4
CCM	ICHmw2	RH	07			2		4	5	4	4
CCM	ICHmw2	RH	07			3		4	5	4	4
CCM	ICHmw2	RH	07			4		5	5	4	5
CCM	ICHmw2	RH	07			5		5	5	4	5
CCM	ICHmw2	RH	07			6		3	4	3	4
CCM	ICHmw2	RH	07			7		3	4	3	4
CCM	ICHmw2	RH	07	k		2		4	5	4	4
CCM	ICHmw2	RH	07	k		3		4	5	4	4

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
CCM	ICHmw2	RH	07	k		4		5	5	4	5
CCM	ICHmw2	RH	07	k		5		5	5	4	5
CCM	ICHmw2	RH	07	k		6		3	4	3	4
CCM	ICHmw2	RH	07	k		7		3	4	3	4
CCM	ICHmw2	RH	07	w		2		4	5	4	4
CCM	ICHmw2	RH	07	w		3		4	5	4	4
CCM	ICHmw2	RH	07	w		4		5	5	4	5
CCM	ICHmw2	RH	07	w		5		5	5	4	5
CCM	ICHmw2	RH	07	w		6		3	4	3	4
CCM	ICHmw2	RH	07	w		7		3	4	3	4
CCM	ICHmw2	RO	99					5	5	5	5
CCM	ICHmw2	RO	99	k				5	5	5	5
CCM	ICHmw2	RO	99	q				5	5	5	5
CCM	ICHmw2	RO	99	w				5	5	5	5
CCM	ICHmw2	RO	99	z				5	5	5	5
CCM	ICHmw2	TA	44					5	5	5	5
CCM	ICHmw2	TA	44	k				5	5	5	5
CCM	ICHmw2	TA	44	q				5	5	5	5
CCM	ICHmw2	TA	44	w				5	5	5	5
CCM	ICHmw2	TA	44	z				5	5	5	5
EPM	At	AW				2		4	5	4	3
EPM	At	AW		k		2		4	5	4	3
EPM	At	AW		w		2		4	5	3	3
EPM	At	BP				2		4	5	4	3
EPM	At	GS				1		6	6	6	6
EPM	At	GS		k		1		6	6	6	6
EPM	At	GS		q		1		6	6	6	6
EPM	At	GS		w		1		6	6	6	6
EPM	At	GS		z		1		6	6	6	6
EPM	At	MN				1		6	6	6	6
EPM	At	MN		k		1		6	6	6	6
EPM	At	MN		q		1		6	6	6	6
EPM	At	MN		w		1		6	6	6	6
EPM	At	MN		z		1		6	6	6	6
EPM	At	RO				1		6	6	6	6
EPM	At	RO		k		1		6	6	6	6
EPM	At	RO		q		1		6	6	6	6
EPM	At	RO		w		1		6	6	6	6
EPM	At	RO		z		1		6	6	6	6
EPM	At	SL				2		5	5	5	5
EPM	At	SL		k		2		5	5	5	5
EPM	At	SL		q		2		5	5	5	5
EPM	At	SL		w		2		5	5	5	5
EPM	At	SL		z		2		5	5	5	5
EPM	At	TA				1		6	6	6	6
EPM	At	TA		k		1		6	6	6	6
EPM	At	TA		q		1		6	6	6	6
EPM	At	TA		w		1		6	6	6	6
EPM	At	TA		z		1		6	6	6	6
EPM	ESSFdk	AC	77			2		4	5	4	3
EPM	ESSFdk	AC	77			3		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdk	AC	77	k		2		4	5	4	3
EPM	ESSFdk	AC	77	k		3		4	5	5	5
EPM	ESSFdk	AC	77	q		2		5	5	4	4
EPM	ESSFdk	AC	77	q		3		5	5	5	5
EPM	ESSFdk	AC	77	w		2		4	5	3	3
EPM	ESSFdk	AC	77	w		3		4	5	5	5
EPM	ESSFdk	AC	77	z		2		5	5	4	4
EPM	ESSFdk	AC	77	z		3		5	5	5	5
EPM	ESSFdk	AR	75			2		4	5	4	3
EPM	ESSFdk	AR	75			3		4	5	5	5
EPM	ESSFdk	AR	75	k		2		4	5	4	3
EPM	ESSFdk	AR	75	k		3		4	5	5	5
EPM	ESSFdk	AR	75	q		2		5	5	4	4
EPM	ESSFdk	AR	75	q		3		5	5	5	5
EPM	ESSFdk	AR	75	w		2		4	5	2	3
EPM	ESSFdk	AR	75	w		3		4	5	5	5
EPM	ESSFdk	AR	75	z		2		5	5	4	4
EPM	ESSFdk	AR	75	z		3		5	5	5	5
EPM	ESSFdk	DM	02			2		5	5	5	5
EPM	ESSFdk	DM	02			3		5	5	5	5
EPM	ESSFdk	DM	02			4		5	5	5	5
EPM	ESSFdk	DM	02			5		5	5	5	5
EPM	ESSFdk	DM	02			6		5	3	5	5
EPM	ESSFdk	DM	02			7		5	3	5	5
EPM	ESSFdk	DM	02	k		2		5	5	5	5
EPM	ESSFdk	DM	02	k		3		5	5	5	5
EPM	ESSFdk	DM	02	k		4		5	5	5	5
EPM	ESSFdk	DM	02	k		5		5	5	5	5
EPM	ESSFdk	DM	02	k		6		5	3	5	5
EPM	ESSFdk	DM	02	k		7		5	3	5	5
EPM	ESSFdk	DM	02	q		2		5	5	5	5
EPM	ESSFdk	DM	02	q		3		5	5	5	5
EPM	ESSFdk	DM	02	q		4		5	5	5	5
EPM	ESSFdk	DM	02	q		5		5	5	5	5
EPM	ESSFdk	DM	02	q		6		5	3	5	5
EPM	ESSFdk	DM	02	q		7		5	3	5	5
EPM	ESSFdk	DM	02	w		2		5	5	5	5
EPM	ESSFdk	DM	02	w		3		5	5	5	5
EPM	ESSFdk	DM	02	w		4		5	5	5	5
EPM	ESSFdk	DM	02	w		5		5	5	5	5
EPM	ESSFdk	DM	02	w		6		5	3	5	5
EPM	ESSFdk	DM	02	w		7		5	3	5	5
EPM	ESSFdk	DM	02	z		2		5	5	5	5
EPM	ESSFdk	DM	02	z		3		5	5	5	5
EPM	ESSFdk	DM	02	z		4		5	5	5	5
EPM	ESSFdk	DM	02	z		5		5	5	5	5
EPM	ESSFdk	DM	02	z		6		5	3	5	5
EPM	ESSFdk	DM	02	z		7		5	3	5	5
EPM	ESSFdk	FA	01			2		4	5	4	3
EPM	ESSFdk	FA	01			3		4	5	5	5
EPM	ESSFdk	FA	01			4		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdk	FA	01			5		4	5	5	5
EPM	ESSFdk	FA	01			6		3	3	4	3
EPM	ESSFdk	FA	01			7		1	2	4	1
EPM	ESSFdk	FA	01	k		2		4	5	4	3
EPM	ESSFdk	FA	01	k		3		4	5	5	5
EPM	ESSFdk	FA	01	k		4		4	5	5	5
EPM	ESSFdk	FA	01	k		5		4	5	5	5
EPM	ESSFdk	FA	01	k		6		3	3	4	3
EPM	ESSFdk	FA	01	k		7		2	2	4	1
EPM	ESSFdk	FA	01	w		2		4	5	3	3
EPM	ESSFdk	FA	01	w		3		4	5	5	5
EPM	ESSFdk	FA	01	w		4		4	5	5	5
EPM	ESSFdk	FA	01	w		5		4	5	5	5
EPM	ESSFdk	FA	01	w		6		3	3	2	3
EPM	ESSFdk	FA	01	w		7		2	2	1	1
EPM	ESSFdk	FG	03			2		4	5	4	3
EPM	ESSFdk	FG	03			3		4	5	5	5
EPM	ESSFdk	FG	03			4		4	5	5	5
EPM	ESSFdk	FG	03			5		4	5	5	5
EPM	ESSFdk	FG	03			6		2	3	4	3
EPM	ESSFdk	FG	03			7		1	2	4	2
EPM	ESSFdk	FG	03	k		2		4	5	4	3
EPM	ESSFdk	FG	03	k		3		4	5	5	5
EPM	ESSFdk	FG	03	k		4		4	5	5	5
EPM	ESSFdk	FG	03	k		5		4	5	5	5
EPM	ESSFdk	FG	03	k		6		2	3	4	3
EPM	ESSFdk	FG	03	k		7		2	2	4	2
EPM	ESSFdk	FG	03	q		2		5	5	4	4
EPM	ESSFdk	FG	03	q		3		5	5	5	5
EPM	ESSFdk	FG	03	q		4		5	5	5	5
EPM	ESSFdk	FG	03	q		5		5	5	5	5
EPM	ESSFdk	FG	03	q		6		5	4	4	4
EPM	ESSFdk	FG	03	q		7		5	4	4	4
EPM	ESSFdk	FG	03	w		2		4	5	3	3
EPM	ESSFdk	FG	03	w		3		4	5	5	5
EPM	ESSFdk	FG	03	w		4		4	5	5	5
EPM	ESSFdk	FG	03	w		5		4	5	5	5
EPM	ESSFdk	FG	03	w		6		2	3	3	3
EPM	ESSFdk	FG	03	w		7		2	2	3	2
EPM	ESSFdk	FG	03	z		2		5	5	4	4
EPM	ESSFdk	FG	03	z		3		5	5	5	5
EPM	ESSFdk	FG	03	z		4		5	5	5	5
EPM	ESSFdk	FG	03	z		5		5	5	5	5
EPM	ESSFdk	FG	03	z		6		5	4	4	4
EPM	ESSFdk	FG	03	z		7		5	4	4	4
EPM	ESSFdk	FH	06			2		4	5	4	3
EPM	ESSFdk	FH	06			3		4	5	5	5
EPM	ESSFdk	FH	06			4		4	5	5	5
EPM	ESSFdk	FH	06			5		4	5	5	5
EPM	ESSFdk	FH	06			6		3	3	4	33
EPM	ESSFdk	FH	06			7		3	2	4	1

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdk	FH	06	k		2		4	5	4	3
EPM	ESSFdk	FH	06	k		3		4	5	5	5
EPM	ESSFdk	FH	06	k		4		4	5	5	5
EPM	ESSFdk	FH	06	k		5		4	5	5	5
EPM	ESSFdk	FH	06	k		6		3	3	4	3
EPM	ESSFdk	FH	06	k		7		3	2	4	1
EPM	ESSFdk	FM	05			2		4	5	4	3
EPM	ESSFdk	FM	05			3		4	5	5	5
EPM	ESSFdk	FM	05			4		4	5	5	5
EPM	ESSFdk	FM	05			5		4	5	5	5
EPM	ESSFdk	FM	05			6		2	3	4	3
EPM	ESSFdk	FM	05			7		1	2	4	1
EPM	ESSFdk	FS	04			2		4	5	4	3
EPM	ESSFdk	FS	04			3		4	5	5	5
EPM	ESSFdk	FS	04			4		4	5	5	5
EPM	ESSFdk	FS	04			5		4	5	5	5
EPM	ESSFdk	FS	04			6		2	3	4	3
EPM	ESSFdk	FS	04			7		1	2	4	2
EPM	ESSFdk	FS	04	k		2		4	5	4	3
EPM	ESSFdk	FS	04	k		3		4	5	5	5
EPM	ESSFdk	FS	04	k		4		4	5	5	5
EPM	ESSFdk	FS	04	k		5		4	5	5	5
EPM	ESSFdk	FS	04	k		6		2	3	4	3
EPM	ESSFdk	FS	04	k		7		1	2	4	2
EPM	ESSFdk	FS	04	q		2		5	5	4	4
EPM	ESSFdk	FS	04	q		3		5	5	5	5
EPM	ESSFdk	FS	04	q		4		5	5	5	5
EPM	ESSFdk	FS	04	q		5		5	5	5	5
EPM	ESSFdk	FS	04	q		6		5	4	4	4
EPM	ESSFdk	FS	04	q		7		5	4	4	4
EPM	ESSFdk	FS	04	w		2		4	5	3	3
EPM	ESSFdk	FS	04	w		3		4	5	5	5
EPM	ESSFdk	FS	04	w		4		4	5	5	5
EPM	ESSFdk	FS	04	w		5		4	5	5	5
EPM	ESSFdk	FS	04	w		6		2	3	3	3
EPM	ESSFdk	FS	04	w		7		1	2	3	2
EPM	ESSFdk	FS	04	z		2		5	5	4	4
EPM	ESSFdk	FS	04	z		3		5	5	5	5
EPM	ESSFdk	FS	04	z		4		5	5	5	5
EPM	ESSFdk	FS	04	z		5		5	5	5	5
EPM	ESSFdk	FS	04	z		6		5	4	4	4
EPM	ESSFdk	FS	04	z		7		5	4	4	4
EPM	ESSFdk	RO	99			1		6	6	6	6
EPM	ESSFdk	RO	99	k		1		6	6	6	6
EPM	ESSFdk	RO	99	q		1		6	6	6	6
EPM	ESSFdk	RO	99	w		1		6	6	6	6
EPM	ESSFdk	RO	99	z		1		6	6	6	6
EPM	ESSFdk	TA	44			1		6	6	6	6
EPM	ESSFdk	TA	44	k		1		6	6	6	6
EPM	ESSFdk	TA	44	q		1		6	6	6	6
EPM	ESSFdk	TA	44	w		1		6	6	6	6

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdk	TA	44	z		1		6	6	6	6
EPM	ESSFdk	WS	07			2		4	5	4	3
EPM	ESSFdk	WS	07			3		4	5	5	5
EPM	ESSFdk	WS	07	k		2		4	5	4	3
EPM	ESSFdk	WS	07	k		3		4	5	5	5
EPM	ESSFdk	WS	07	w		2		4	5	3	3
EPM	ESSFdk	WS	07	w		3		4	5	5	5
EPM	ESSFdkp	AC	77			2		4	5	4	3
EPM	ESSFdkp	AC	77			3		4	5	5	5
EPM	ESSFdkp	AC	77	k		2		4	5	4	3
EPM	ESSFdkp	AC	77	k		3		4	5	5	5
EPM	ESSFdkp	AC	77	q		2		5	5	4	4
EPM	ESSFdkp	AC	77	q		3		5	5	5	5
EPM	ESSFdkp	AC	77	w		2		4	5	3	3
EPM	ESSFdkp	AC	77	w		3		4	5	5	5
EPM	ESSFdkp	AC	77	z		2		5	5	4	4
EPM	ESSFdkp	AC	77	z		3		5	5	5	5
EPM	ESSFdkp	AW	02			2		4	5	4	3
EPM	ESSFdkp	AW	02			3		4	5	5	5
EPM	ESSFdkp	AW	02	k		2		4	5	4	3
EPM	ESSFdkp	AW	02	k		3		4	5	5	5
EPM	ESSFdkp	AW	02	q		2		5	5	4	4
EPM	ESSFdkp	AW	02	q		3		5	5	5	5
EPM	ESSFdkp	AW	02	w		2		4	5	3	3
EPM	ESSFdkp	AW	02	w		3		4	5	5	5
EPM	ESSFdkp	AW	02	z		2		5	5	4	4
EPM	ESSFdkp	AW	02	z		3		5	5	5	5
EPM	ESSFdkp	EM	01			2		4	5	4	3
EPM	ESSFdkp	EM	01			3		4	5	5	5
EPM	ESSFdkp	EM	01			4		4	5	5	5
EPM	ESSFdkp	EM	01			5		4	5	5	5
EPM	ESSFdkp	EM	01			6		2	3	4	3
EPM	ESSFdkp	EM	01			7		1	1	4	1
EPM	ESSFdkp	EM	01	k		2		4	5	4	3
EPM	ESSFdkp	EM	01	k		3		4	5	5	5
EPM	ESSFdkp	EM	01	k		4		4	5	5	5
EPM	ESSFdkp	EM	01	k		5		4	5	5	5
EPM	ESSFdkp	EM	01	k		6		2	3	4	3
EPM	ESSFdkp	EM	01	k		7		2	1	4	1
EPM	ESSFdkp	EM	01	q		2		5	5	4	4
EPM	ESSFdkp	EM	01	q		3		5	5	5	5
EPM	ESSFdkp	EM	01	q		4		5	5	5	5
EPM	ESSFdkp	EM	01	q		5		5	5	5	5
EPM	ESSFdkp	EM	01	q		6		5	4	4	4
EPM	ESSFdkp	EM	01	q		7		5	4	4	4
EPM	ESSFdkp	EM	01	w		2		4	5	2	3
EPM	ESSFdkp	EM	01	w		3		4	5	5	5
EPM	ESSFdkp	EM	01	w		4		4	5	5	5
EPM	ESSFdkp	EM	01	w		5		4	5	5	5
EPM	ESSFdkp	EM	01	w		6		2	3	2	3
EPM	ESSFdkp	EM	01	w		7		2	1	1	1

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdkp	EM	01	z		2		5	5	4	4
EPM	ESSFdkp	EM	01	z		3		5	5	5	5
EPM	ESSFdkp	EM	01	z		4		5	5	5	5
EPM	ESSFdkp	EM	01	z		5		5	5	5	5
EPM	ESSFdkp	EM	01	z		6		5	4	4	4
EPM	ESSFdkp	EM	01	z		7		5	4	4	4
EPM	ESSFdkp	GS	88			1		6	6	6	6
EPM	ESSFdkp	GS	88	k		1		6	6	6	6
EPM	ESSFdkp	GS	88	q		1		6	6	6	6
EPM	ESSFdkp	GS	88	w		1		6	6	6	6
EPM	ESSFdkp	GS	88	z		1		6	6	6	6
EPM	ESSFdkp	LM	05			2		4	5	4	3
EPM	ESSFdkp	LM	05			3		4	5	5	5
EPM	ESSFdkp	LM	05			4		4	5	5	5
EPM	ESSFdkp	LM	05			5		4	5	5	5
EPM	ESSFdkp	LM	05			6		2	3	4	3
EPM	ESSFdkp	LM	05			7		1	1	4	1
EPM	ESSFdkp	LM	05	k		2		4	5	4	3
EPM	ESSFdkp	LM	05	k		3		4	5	5	5
EPM	ESSFdkp	LM	05	k		4		4	5	5	5
EPM	ESSFdkp	LM	05	k		5		4	5	5	5
EPM	ESSFdkp	LM	05	k		6		2	3	4	3
EPM	ESSFdkp	LM	05	k		7		2	1	4	1
EPM	ESSFdkp	LM	05	w		2		4	5	2	3
EPM	ESSFdkp	LM	05	w		3		4	5	5	5
EPM	ESSFdkp	LM	05	w		4		4	5	5	5
EPM	ESSFdkp	LM	05	w		5		4	5	5	5
EPM	ESSFdkp	LM	05	w		6		2	3	2	3
EPM	ESSFdkp	LM	05	w		7		2	1	1	1
EPM	ESSFdkp	MN				1		6	6	6	6
EPM	ESSFdkp	MN		k		1		6	6	6	6
EPM	ESSFdkp	MN		q		1		6	6	6	6
EPM	ESSFdkp	MN		w		1		6	6	6	6
EPM	ESSFdkp	MN		z		1		6	6	6	6
EPM	ESSFdkp	RO	99			1		6	6	6	6
EPM	ESSFdkp	RO	99	k		1		6	6	6	6
EPM	ESSFdkp	RO	99	q		1		6	6	6	6
EPM	ESSFdkp	RO	99	w		1		6	6	6	6
EPM	ESSFdkp	RO	99	z		1		6	6	6	6
EPM	ESSFdkp	TA	44			1		6	6	6	6
EPM	ESSFdkp	TA	44	k		1		6	6	6	6
EPM	ESSFdkp	TA	44	q		1		6	6	6	6
EPM	ESSFdkp	TA	44	w		1		6	6	6	6
EPM	ESSFdkp	TA	44	z		1		6	6	6	6
EPM	ESSFdkp	WF	03			2		4	5	4	3
EPM	ESSFdkp	WF	03			3		4	5	5	5
EPM	ESSFdkp	WF	03			4		4	5	5	5
EPM	ESSFdkp	WF	03			5		4	5	5	5
EPM	ESSFdkp	WF	03			6		2	3	4	3
EPM	ESSFdkp	WF	03			7		1	1	4	2
EPM	ESSFdkp	WF	03	k		2		4	5	4	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdkp	WF	03	k		3		4	5	5	5
EPM	ESSFdkp	WF	03	k		4		4	5	5	5
EPM	ESSFdkp	WF	03	k		5		4	5	5	5
EPM	ESSFdkp	WF	03	k		6		2	3	4	3
EPM	ESSFdkp	WF	03	k		7		2	1	4	2
EPM	ESSFdkp	WF	03	q		2		5	5	4	4
EPM	ESSFdkp	WF	03	q		3		5	5	5	5
EPM	ESSFdkp	WF	03	q		4		5	5	5	5
EPM	ESSFdkp	WF	03	q		5		5	5	5	5
EPM	ESSFdkp	WF	03	q		6		5	4	4	4
EPM	ESSFdkp	WF	03	q		7		5	4	4	4
EPM	ESSFdkp	WF	03	w		2		4	5	3	3
EPM	ESSFdkp	WF	03	w		3		4	5	5	5
EPM	ESSFdkp	WF	03	w		4		4	5	5	5
EPM	ESSFdkp	WF	03	w		5		4	5	5	5
EPM	ESSFdkp	WF	03	w		6		2	3	3	3
EPM	ESSFdkp	WF	03	w		7		2	1	3	2
EPM	ESSFdkp	WF	03	z		2		5	5	4	4
EPM	ESSFdkp	WF	03	z		3		5	5	5	5
EPM	ESSFdkp	WF	03	z		4		5	5	5	5
EPM	ESSFdkp	WF	03	z		5		5	5	5	5
EPM	ESSFdkp	WF	03	z		6		5	4	4	4
EPM	ESSFdkp	WF	03	z		7		5	4	4	4
EPM	ESSFdkp	YW	04	w		2		4	5	2	3
EPM	ESSFdkp	YW	04	z		2		5	5	4	4
EPM	ESSFdku	AC	77			2		4	5	4	3
EPM	ESSFdku	AC	77			3		4	5	5	5
EPM	ESSFdku	AC	77	k		2		4	5	4	3
EPM	ESSFdku	AC	77	k		3		4	5	5	5
EPM	ESSFdku	AC	77	q		2		5	5	4	4
EPM	ESSFdku	AC	77	q		3		5	5	5	5
EPM	ESSFdku	AC	77	w		2		4	5	3	3
EPM	ESSFdku	AC	77	w		3		4	5	5	5
EPM	ESSFdku	AC	77	z		2		5	5	4	4
EPM	ESSFdku	AC	77	z		3		5	5	5	5
EPM	ESSFdku	AR	75			2		4	5	4	3
EPM	ESSFdku	AR	75			3		4	5	5	5
EPM	ESSFdku	AR	75			4		4	5	5	5
EPM	ESSFdku	AR	75	k		2		4	5	4	3
EPM	ESSFdku	AR	75	k		3		4	5	5	5
EPM	ESSFdku	AR	75	k		4		4	5	5	5
EPM	ESSFdku	AR	75	q		2		5	5	4	4
EPM	ESSFdku	AR	75	q		3		5	5	5	5
EPM	ESSFdku	AR	75	q		4		5	5	5	5
EPM	ESSFdku	AR	75	w		2		4	5	2	3
EPM	ESSFdku	AR	75	w		3		4	5	5	5
EPM	ESSFdku	AR	75	w		4		4	5	5	5
EPM	ESSFdku	AR	75	z		2		5	5	4	4
EPM	ESSFdku	AR	75	z		3		5	5	5	5
EPM	ESSFdku	AR	75	z		4		5	5	5	5
EPM	ESSFdku	FG	64			2		4	5	4	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdku	FG	64			3		4	5	5	5
EPM	ESSFdku	FG	64			4		4	5	5	5
EPM	ESSFdku	FG	64			5		4	5	5	5
EPM	ESSFdku	FG	64			6		2	3	4	3
EPM	ESSFdku	FG	64			7		1	1	4	2
EPM	ESSFdku	FG	64	k		2		4	5	4	3
EPM	ESSFdku	FG	64	k		3		4	5	5	5
EPM	ESSFdku	FG	64	k		4		4	5	5	5
EPM	ESSFdku	FG	64	k		5		4	5	5	5
EPM	ESSFdku	FG	64	k		6		2	3	4	3
EPM	ESSFdku	FG	64	k		7		2	1	4	2
EPM	ESSFdku	FG	64	q		2		5	5	4	4
EPM	ESSFdku	FG	64	q		3		5	5	5	5
EPM	ESSFdku	FG	64	q		4		5	5	5	5
EPM	ESSFdku	FG	64	q		5		5	5	5	5
EPM	ESSFdku	FG	64	q		6		5	4	4	4
EPM	ESSFdku	FG	64	q		7		5	4	4	4
EPM	ESSFdku	FG	64	w		2		4	5	3	3
EPM	ESSFdku	FG	64	w		3		4	5	5	5
EPM	ESSFdku	FG	64	w		4		4	5	5	5
EPM	ESSFdku	FG	64	w		5		4	5	5	5
EPM	ESSFdku	FG	64	w		6		2	3	3	3
EPM	ESSFdku	FG	64	w		7		2	1	2	2
EPM	ESSFdku	FG	64	z		2		5	5	4	4
EPM	ESSFdku	FG	64	z		3		5	5	5	5
EPM	ESSFdku	FG	64	z		4		5	5	5	5
EPM	ESSFdku	FG	64	z		5		5	5	5	5
EPM	ESSFdku	FG	64	z		6		5	4	4	4
EPM	ESSFdku	FG	64	z		7		5	4	4	4
EPM	ESSFdku	FH	68			2		4	5	4	3
EPM	ESSFdku	FH	68			3		4	5	5	5
EPM	ESSFdku	FH	68			4		4	5	5	5
EPM	ESSFdku	FH	68			5		4	5	5	5
EPM	ESSFdku	FH	68			6		3	3	4	3
EPM	ESSFdku	FH	68			7		3	2	4	1
EPM	ESSFdku	FH	68	k		2		4	5	4	3
EPM	ESSFdku	FH	68	k		3		4	5	5	5
EPM	ESSFdku	FH	68	k		4		4	5	5	5
EPM	ESSFdku	FH	68	k		5		4	5	5	5
EPM	ESSFdku	FH	68	k		6		3	3	4	3
EPM	ESSFdku	FH	68	k		7		3	2	4	1
EPM	ESSFdku	GS	88			1		6	6	6	6
EPM	ESSFdku	GS	88	k		1		6	6	6	6
EPM	ESSFdku	HG	67			2		4	5	4	3
EPM	ESSFdku	HG	67			3		5	5	5	5
EPM	ESSFdku	HG	67			4		5	5	5	5
EPM	ESSFdku	HG	67			5		5	5	5	5
EPM	ESSFdku	HG	67			6		2	3	4	3
EPM	ESSFdku	HG	67			7		1	1	4	1
EPM	ESSFdku	HG	67	k		2		4	5	4	3
EPM	ESSFdku	HG	67	k		3		5	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdku	HG	67	k		4		5	5	5	5
EPM	ESSFdku	HG	67	k		5		5	5	5	5
EPM	ESSFdku	HG	67	k		6		2	3	4	3
EPM	ESSFdku	HG	67	k		7		2	1	4	1
EPM	ESSFdku	HG	67	q		2		5	5	4	4
EPM	ESSFdku	HG	67	q		3		5	5	5	5
EPM	ESSFdku	HG	67	q		4		5	5	5	5
EPM	ESSFdku	HG	67	q		5		5	5	5	5
EPM	ESSFdku	HG	67	q		6		5	4	4	4
EPM	ESSFdku	HG	67	q		7		5	4	4	4
EPM	ESSFdku	HG	67	w		2		4	5	2	3
EPM	ESSFdku	HG	67	w		3		5	5	5	5
EPM	ESSFdku	HG	67	w		4		5	5	5	5
EPM	ESSFdku	HG	67	w		5		5	5	5	5
EPM	ESSFdku	HG	67	w		6		2	3	2	3
EPM	ESSFdku	HG	67	w		7		2	1	1	1
EPM	ESSFdku	LG	61			2		4	5	4	3
EPM	ESSFdku	LG	61			3		4	5	5	5
EPM	ESSFdku	LG	61			4		4	5	5	5
EPM	ESSFdku	LG	61			5		4	5	5	5
EPM	ESSFdku	LG	61			6		2	3	4	3
EPM	ESSFdku	LG	61			7		1	1	4	1
EPM	ESSFdku	LG	61	k		2		4	5	3	3
EPM	ESSFdku	LG	61	k		3		4	5	5	5
EPM	ESSFdku	LG	61	k		4		4	5	5	5
EPM	ESSFdku	LG	61	k		5		4	5	5	5
EPM	ESSFdku	LG	61	k		6		2	3	2	3
EPM	ESSFdku	LG	61	k		7		2	1	1	1
EPM	ESSFdku	LG	61	q		2		5	5	4	4
EPM	ESSFdku	LG	61	q		3		5	5	5	5
EPM	ESSFdku	LG	61	q		4		5	5	5	5
EPM	ESSFdku	LG	61	q		5		5	5	5	5
EPM	ESSFdku	LG	61	q		6		5	4	4	4
EPM	ESSFdku	LG	61	q		7		5	4	4	4
EPM	ESSFdku	LG	61	w		2		4	5	4	3
EPM	ESSFdku	LG	61	w		3		4	5	5	5
EPM	ESSFdku	LG	61	w		4		4	5	5	5
EPM	ESSFdku	LG	61	w		5		4	5	5	5
EPM	ESSFdku	LG	61	w		6		2	3	4	3
EPM	ESSFdku	LG	61	w		7		2	1	4	1
EPM	ESSFdku	LH	65			2		4	5	4	3
EPM	ESSFdku	LH	65			3		4	5	5	5
EPM	ESSFdku	LH	65			4		4	5	5	5
EPM	ESSFdku	LH	65			5		4	5	5	5
EPM	ESSFdku	LH	65			6		2	3	4	3
EPM	ESSFdku	LH	65			7		1	1	4	2
EPM	ESSFdku	LH	65	k		2		4	5	4	3
EPM	ESSFdku	LH	65	k		3		4	5	5	5
EPM	ESSFdku	LH	65	k		4		4	5	5	5
EPM	ESSFdku	LH	65	k		5		4	5	5	5
EPM	ESSFdku	LH	65	k		6		2	3	4	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdku	LH	65	k		7		2	1	4	2
EPM	ESSFdku	LH	65	w		2		4	5	3	3
EPM	ESSFdku	LH	65	w		3		4	5	5	5
EPM	ESSFdku	LH	65	w		4		4	5	5	5
EPM	ESSFdku	LH	65	w		5		4	5	5	5
EPM	ESSFdku	LH	65	w		6		2	3	3	3
EPM	ESSFdku	LH	65	w		7		2	1	2	2
EPM	ESSFdku	LH	65	z		2		5	5	4	4
EPM	ESSFdku	LH	65	z		3		5	5	5	5
EPM	ESSFdku	LH	65	z		4		5	5	5	5
EPM	ESSFdku	LH	65	z		5		5	5	5	5
EPM	ESSFdku	LH	65	z		6		5	4	4	4
EPM	ESSFdku	LH	65	z		7		5	4	4	4
EPM	ESSFdku	LM	63			2		4	5	4	3
EPM	ESSFdku	LM	63			3		4	5	5	5
EPM	ESSFdku	LM	63			4		4	5	5	5
EPM	ESSFdku	LM	63			5		4	5	5	5
EPM	ESSFdku	LM	63			6		3	3	4	3
EPM	ESSFdku	LM	63			7		3	1	4	2
EPM	ESSFdku	LM	63	k		2		4	5	4	3
EPM	ESSFdku	LM	63	k		3		4	5	5	5
EPM	ESSFdku	LM	63	k		4		4	5	5	5
EPM	ESSFdku	LM	63	k		5		4	5	5	5
EPM	ESSFdku	LM	63	k		6		3	3	4	33
EPM	ESSFdku	LM	63	k		7		3	1	4	2
EPM	ESSFdku	LM	63	q		2		5	5	4	4
EPM	ESSFdku	LM	63	q		3		5	5	5	5
EPM	ESSFdku	LM	63	q		4		5	5	5	5
EPM	ESSFdku	LM	63	q		5		5	5	5	5
EPM	ESSFdku	LM	63	q		6		5	5	4	4
EPM	ESSFdku	LM	63	q		7		5	5	4	4
EPM	ESSFdku	LM	63	w		2		4	5	3	3
EPM	ESSFdku	LM	63	w		3		4	5	5	5
EPM	ESSFdku	LM	63	w		4		4	5	5	5
EPM	ESSFdku	LM	63	w		5		4	5	5	5
EPM	ESSFdku	LM	63	w		6		3	3	3	3
EPM	ESSFdku	LM	63	w		7		3	1	2	2
EPM	ESSFdku	LM	63	z		2		5	5	4	4
EPM	ESSFdku	LM	63	z		3		5	5	5	5
EPM	ESSFdku	LM	63	z		4		5	5	5	5
EPM	ESSFdku	LM	63	z		5		5	5	5	5
EPM	ESSFdku	LM	63	z		6		5	5	4	4
EPM	ESSFdku	LM	63	z		7		5	5	4	4
EPM	ESSFdku	MN				1		6	6	6	6
EPM	ESSFdku	MN		k		1		6	6	6	6
EPM	ESSFdku	MN		q		1		6	6	6	6
EPM	ESSFdku	MN		w		1		6	6	6	6
EPM	ESSFdku	MN		z		1		6	6	6	6
EPM	ESSFdku	PJ	62			2		4	5	4	3
EPM	ESSFdku	PJ	62			3		4	5	5	5
EPM	ESSFdku	PJ	62			4		4	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	ESSFdku	PJ	62			5		4	5	5	5
EPM	ESSFdku	PJ	62			6		2	3	4	5
EPM	ESSFdku	PJ	62			7		1	1	4	5
EPM	ESSFdku	PJ	62	k		2		4	5	4	3
EPM	ESSFdku	PJ	62	k		3		4	5	5	5
EPM	ESSFdku	PJ	62	k		4		4	5	5	5
EPM	ESSFdku	PJ	62	k		5		4	5	5	5
EPM	ESSFdku	PJ	62	k		6		2	3	4	5
EPM	ESSFdku	PJ	62	k		7		2	1	4	5
EPM	ESSFdku	PJ	62	q		2		5	5	4	4
EPM	ESSFdku	PJ	62	q		3		5	5	5	5
EPM	ESSFdku	PJ	62	q		4		5	5	5	5
EPM	ESSFdku	PJ	62	q		5		5	5	5	5
EPM	ESSFdku	PJ	62	q		6		5	4	4	4
EPM	ESSFdku	PJ	62	q		7		5	4	4	4
EPM	ESSFdku	PJ	62	w		2		4	5	3	3
EPM	ESSFdku	PJ	62	w		3		4	5	5	5
EPM	ESSFdku	PJ	62	w		4		4	5	5	5
EPM	ESSFdku	PJ	62	w		5		4	5	5	5
EPM	ESSFdku	PJ	62	w		6		2	3	3	5
EPM	ESSFdku	PJ	62	w		7		2	1	3	5
EPM	ESSFdku	PJ	62	z		2		5	5	4	4
EPM	ESSFdku	PJ	62	z		3		5	5	5	5
EPM	ESSFdku	PJ	62	z		4		5	5	5	5
EPM	ESSFdku	PJ	62	z		5		5	5	5	5
EPM	ESSFdku	PJ	62	z		6		5	4	4	4
EPM	ESSFdku	PJ	62	z		7		5	4	4	4
EPM	ESSFdku	PW	66			2		4	5	4	3
EPM	ESSFdku	PW	66	k		2		4	5	3	3
EPM	ESSFdku	RO	99			1		6	6	6	6
EPM	ESSFdku	RO	99	k		1		6	6	6	6
EPM	ESSFdku	RO	99	q		1		6	6	6	6
EPM	ESSFdku	RO	99	w		1		6	6	6	6
EPM	ESSFdku	RO	99	z		1		6	6	6	6
EPM	ESSFdku	TA	44			1		6	6	6	6
EPM	ESSFdku	TA	44	k		1		6	6	6	6
EPM	ESSFdku	TA	44	q		1		6	6	6	6
EPM	ESSFdku	TA	44	w		1		6	6	6	6
EPM	ESSFdku	TA	44	z		1		6	6	6	6
EPM	ESSFdku	WS	69			2		4	5	4	3
EPM	ESSFdku	WS	69			3		4	5	5	5
EPM	ESSFdku	WS	69	k		2		4	5	4	3
EPM	ESSFdku	WS	69	k		3		4	5	5	5
EPM	ESSFdku	WS	69	w		2		4	5	3	3
EPM	ESSFdku	WS	69	w		3		4	5	5	5
EPM	MSdk	AC	77			2		4	5	4	3
EPM	MSdk	AC	77			3		4	5	5	5
EPM	MSdk	AC	77	k		2		4	5	4	3
EPM	MSdk	AC	77	k		3		4	5	5	5
EPM	MSdk	AC	77	q		2		5	5	4	4
EPM	MSdk	AC	77	q		3		5	5	5	5

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	MSdk	AC	77	w		2		4	5	3	3
EPM	MSdk	AC	77	w		3		4	5	5	5
EPM	MSdk	AC	77	z		2		5	5	4	4
EPM	MSdk	AC	77	z		3		5	5	5	5
EPM	MSdk	AR	75			2		4	5	4	3
EPM	MSdk	AR	75			3		4	5	5	5
EPM	MSdk	AR	75	k		2		4	5	4	3
EPM	MSdk	AR	75	k		3		4	5	5	5
EPM	MSdk	AR	75	q		2		5	5	4	4
EPM	MSdk	AR	75	q		3		5	5	5	5
EPM	MSdk	AR	75	w		2		4	5	2	3
EPM	MSdk	AR	75	w		3		4	5	5	5
EPM	MSdk	AR	75	z		2		5	5	4	4
EPM	MSdk	AR	75	z		3		5	5	5	5
EPM	MSdk	LJ	03	k		2		4	5	4	5
EPM	MSdk	LJ	03	k		3		4	5	5	5
EPM	MSdk	LJ	03	k		4		4	5	5	5
EPM	MSdk	LJ	03	k		5		4	5	5	5
EPM	MSdk	LJ	03	k		6		4	5	4	5
EPM	MSdk	LJ	03	k		7		3	5	4	5
EPM	MSdk	LJ	03	w		2		4	5	3	5
EPM	MSdk	LJ	03	w		3		4	5	5	5
EPM	MSdk	LJ	03	w		4		4	5	5	5
EPM	MSdk	LJ	03	w		5		4	5	5	5
EPM	MSdk	LJ	03	w		6		4	5	3	5
EPM	MSdk	LJ	03	w		7		3	5	3	5
EPM	MSdk	LJ	03	z		2		5	5	4	5
EPM	MSdk	LJ	03	z		3		5	5	5	5
EPM	MSdk	LJ	03	z		4		5	5	5	5
EPM	MSdk	LJ	03	z		5		5	5	5	5
EPM	MSdk	LJ	03	z		6		5	5	4	5
EPM	MSdk	LJ	03	z		7		5	5	4	5
EPM	MSdk	LP	04			2		4	5	4	4
EPM	MSdk	LP	04			3		4	5	5	5
EPM	MSdk	LP	04			4		4	5	5	5
EPM	MSdk	LP	04			5		4	5	5	5
EPM	MSdk	LP	04			6		4	5	4	4
EPM	MSdk	LP	04			7		3	5	4	4
EPM	MSdk	LP	04	k		2		4	5	4	4
EPM	MSdk	LP	04	k		3		4	5	5	5
EPM	MSdk	LP	04	k		4		4	5	5	5
EPM	MSdk	LP	04	k		5		4	5	5	5
EPM	MSdk	LP	04	k		6		4	5	4	4
EPM	MSdk	LP	04	k		7		3	5	4	4
EPM	MSdk	LP	04	w		2		4	5	3	4
EPM	MSdk	LP	04	w		3		4	5	5	5
EPM	MSdk	LP	04	w		4		4	5	5	5
EPM	MSdk	LP	04	w		5		4	5	5	5
EPM	MSdk	LP	04	w		6		3	5	3	4
EPM	MSdk	LP	04	w		7		3	5	3	4
EPM	MSdk	RO	99			1		6	6	6	6

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	MSdk	RO	99	k		1		6	6	6	6
EPM	MSdk	RO	99	q		1		6	6	6	6
EPM	MSdk	RO	99	w		1		6	6	6	6
EPM	MSdk	RO	99	z		1		6	6	6	6
EPM	MSdk	SB	07			2		4	5	4	4
EPM	MSdk	SB	07			3		4	5	5	5
EPM	MSdk	SB	07			4		4	5	5	5
EPM	MSdk	SB	07			5		4	5	5	5
EPM	MSdk	SB	07			6		4	5	4	4
EPM	MSdk	SB	07			7		3	5	4	4
EPM	MSdk	SB	07	k		2		4	5	4	4
EPM	MSdk	SB	07	k		3		4	5	5	5
EPM	MSdk	SB	07	k		4		4	5	5	5
EPM	MSdk	SB	07	k		5		4	5	5	5
EPM	MSdk	SB	07	k		6		4	5	4	4
EPM	MSdk	SB	07	k		7		3	5	4	4
EPM	MSdk	SB	07	w		2		4	5	3	4
EPM	MSdk	SB	07	w		3		4	5	5	5
EPM	MSdk	SB	07	w		4		4	5	5	5
EPM	MSdk	SB	07	w		5		4	5	5	5
EPM	MSdk	SB	07	w		6		4	5	3	4
EPM	MSdk	SB	07	w		7		3	5	3	4
EPM	MSdk	SG	01			2		4	5	4	4
EPM	MSdk	SG	01			3		4	5	5	5
EPM	MSdk	SG	01			4		4	5	5	5
EPM	MSdk	SG	01			5		4	5	5	5
EPM	MSdk	SG	01			6		4	5	4	4
EPM	MSdk	SG	01			7		3	5	4	4
EPM	MSdk	SG	01	k		2		4	5	4	4
EPM	MSdk	SG	01	k		3		4	5	5	5
EPM	MSdk	SG	01	k		4		4	5	5	5
EPM	MSdk	SG	01	k		5		4	5	5	5
EPM	MSdk	SG	01	k		6		4	5	4	4
EPM	MSdk	SG	01	k		7		3	5	4	4
EPM	MSdk	SG	01	w		2		4	5	3	4
EPM	MSdk	SG	01	w		3		4	5	5	5
EPM	MSdk	SG	01	w		4		4	5	5	5
EPM	MSdk	SG	01	w		5		4	5	5	5
EPM	MSdk	SG	01	w		6		4	5	3	4
EPM	MSdk	SG	01	w		7		3	5	3	4
EPM	MSdk	SH	06			2		4	5	4	4
EPM	MSdk	SH	06			3		4	5	5	5
EPM	MSdk	SH	06			4		4	5	5	5
EPM	MSdk	SH	06			5		4	5	5	5
EPM	MSdk	SH	06			6		4	5	4	4
EPM	MSdk	SH	06			7		3	5	4	4
EPM	MSdk	SS	05			2		4	5	4	4
EPM	MSdk	SS	05			3		4	5	5	5
EPM	MSdk	SS	05			4		4	5	5	5
EPM	MSdk	SS	05			5		4	5	5	5
EPM	MSdk	SS	05			6		4	5	4	4

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	EW	LW	Sp	Su/Fa
EPM	MSdk	SS	05			7		3	5	4	4
EPM	MSdk	SS	05	k		2		4	5	4	4
EPM	MSdk	SS	05	k		3		4	5	5	5
EPM	MSdk	SS	05	k		4		4	5	5	5
EPM	MSdk	SS	05	k		5		4	5	5	5
EPM	MSdk	SS	05	k		6		4	5	4	4
EPM	MSdk	SS	05	k		7		3	5	4	4
EPM	MSdk	SS	05	w		2		4	5	3	4
EPM	MSdk	SS	05	w		3		4	5	5	5
EPM	MSdk	SS	05	w		4		4	5	5	5
EPM	MSdk	SS	05	w		5		4	5	5	5
EPM	MSdk	SS	05	w		6		4	5	3	4
EPM	MSdk	SS	05	w		7		3	5	3	4
EPM	MSdk	SW	02			2		5	5	5	5
EPM	MSdk	SW	02			3		5	5	5	5
EPM	MSdk	SW	02	k		2		5	5	5	5
EPM	MSdk	SW	02	k		3		5	5	5	5
EPM	MSdk	SW	02	q		2		5	5	5	5
EPM	MSdk	SW	02	q		3		5	5	5	5
EPM	MSdk	SW	02	w		2		5	5	5	5
EPM	MSdk	SW	02	w		3		5	5	5	5
EPM	MSdk	SW	02	z		2		5	5	5	5
EPM	MSdk	SW	02	z		3		5	5	5	5
EPM	MSdk	TA	44			1		6	6	6	6
EPM	MSdk	TA	44	k		1		6	6	6	6
EPM	MSdk	TA	44	q		1		6	6	6	6
EPM	MSdk	TA	44	w		1		6	6	6	6
EPM	MSdk	TA	44	z		1		6	6	6	6
EPM	MSdk	WS				2		4	5	4	4
EPM	MSdk	WS				3		4	5	5	5
EPM	MSdk	WS		w		2		4	5	3	4
EPM	MSdk	WS		w		3		4	5	5	5

APPENDIX E

Habitat Ratings for Grizzly bear

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	At	AW				2		4	3	3
CCM	At	AW		k		2		4	3	3
CCM	At	AW		w		2		4	3	3
CCM	At	BP				2		3	3	3
CCM	At	GS						4	4	
CCM	At	GS		k				4	4	
CCM	At	GS		q				4	4	
CCM	At	GS		w				4	4	
CCM	At	GS		z				4	4	
CCM	At	MN						4	4	
CCM	At	MN		k				4	4	
CCM	At	MN		q				4	4	
CCM	At	MN		w				4	4	
CCM	At	MN		z				4	4	
CCM	At	RO						4	4	
CCM	At	RO		k				4	4	
CCM	At	RO		q				4	4	
CCM	At	RO		w				4	4	
CCM	At	RO		z				4	4	
CCM	At	SL						4	4	
CCM	At	SL		k				4	4	
CCM	At	SL		q				4	4	
CCM	At	SL		w				4	4	
CCM	At	SL		z				4	4	
CCM	At	TA						3	3	3
CCM	At	TA		k				3	3	3
CCM	At	TA		q				3	3	3
CCM	At	TA		w				3	3	3
CCM	At	TA		z				3	3	3
CCM	ESSFwm	AC						3	3	3
CCM	ESSFwm	AC		k		2		3	3	3
CCM	ESSFwm	AC		q				3	3	3
CCM	ESSFwm	AC		w				2	3	3
CCM	ESSFwm	AC		z				3	3	3
CCM	ESSFwm	AR				2		2	2	3
CCM	ESSFwm	AR		k		2		2	2	3
CCM	ESSFwm	AR		q		2		2	2	3
CCM	ESSFwm	AR		w		2		1	2	3
CCM	ESSFwm	AR		z		2		1	2	3
CCM	ESSFwm	FA				2		2	3	3
CCM	ESSFwm	FA				3		3	3	3
CCM	ESSFwm	FA		k		2		2	3	2

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwm	FA		k		3		3	3	1
CCM	ESSFwm	FA		w		2		1	3	2
CCM	ESSFwm	FA		w		3		2	3	1
CCM	ESSFwm	FG				2		2	2	3
CCM	ESSFwm	FG				3		2	2	3
CCM	ESSFwm	FG				4		3	3	1
CCM	ESSFwm	FG				5		3	3	1
CCM	ESSFwm	FG				6		3	3	1
CCM	ESSFwm	FG				7		3	3	1
CCM	ESSFwm	FG		k		2		3	3	3
CCM	ESSFwm	FG		k		3		3	2	3
CCM	ESSFwm	FG		k		4		3	3	1
CCM	ESSFwm	FG		k		5		3	3	1
CCM	ESSFwm	FG		k		6		3	3	1
CCM	ESSFwm	FG		k		7		3	3	1
CCM	ESSFwm	FG		q		2		3	3	3
CCM	ESSFwm	FG		q		3		3	2	3
CCM	ESSFwm	FG		q		4		3	3	1
CCM	ESSFwm	FG		q		5		3	3	1
CCM	ESSFwm	FG		q		6		3	3	1
CCM	ESSFwm	FG		q		7		3	3	1
CCM	ESSFwm	FG		w		2		3	3	3
CCM	ESSFwm	FG		w		3		3	3	3
CCM	ESSFwm	FG		w		4		3	3	2
CCM	ESSFwm	FG		w		5		3	3	1
CCM	ESSFwm	FG		w		6		3	3	1
CCM	ESSFwm	FG		w		7		3	2	1
CCM	ESSFwm	FG		z		2		3	3	3
CCM	ESSFwm	FG		z		3		3	3	3
CCM	ESSFwm	FG		z		4		3	3	2
CCM	ESSFwm	FG		z		5		3	3	1
CCM	ESSFwm	FG		z		6		3	3	1
CCM	ESSFwm	FG		z		7		3	2	1
CCM	ESSFwm	FH				2		3	2	3
CCM	ESSFwm	FH				3		3	2	3
CCM	ESSFwm	FH				4		3	3	3
CCM	ESSFwm	FH				5		3	3	2
CCM	ESSFwm	FH				6		3	3	2
CCM	ESSFwm	FH				7		3	3	2
CCM	ESSFwm	FQ				2		3	2	3
CCM	ESSFwm	FQ				3		3	2	3
CCM	ESSFwm	FQ				4		3	3	3
CCM	ESSFwm	FQ				5		3	3	2
CCM	ESSFwm	FQ				6		3	3	2
CCM	ESSFwm	FQ				7		3	3	2
CCM	ESSFwm	FR		k		2		3	3	3
CCM	ESSFwm	FR		k		3		3	3	3
CCM	ESSFwm	FR		k		4		3	3	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwm	FR		k		5		3	3	2
CCM	ESSFwm	FR		k		6		3	3	2
CCM	ESSFwm	FR		k		7		3	3	2
CCM	ESSFwm	FR		q		2		3	3	3
CCM	ESSFwm	FR		q		3		3	3	3
CCM	ESSFwm	FR		q		4		3	3	3
CCM	ESSFwm	FR		q		5		3	3	2
CCM	ESSFwm	FR		q		6		3	3	2
CCM	ESSFwm	FR		q		7		3	3	2
CCM	ESSFwm	FR		w		2		3	2	3
CCM	ESSFwm	FR		w		3		3	2	3
CCM	ESSFwm	FR		w		4		3	2	3
CCM	ESSFwm	FR		w		5		3	2	2
CCM	ESSFwm	FR		w		6		3	2	2
CCM	ESSFwm	FR		w		7		3	2	2
CCM	ESSFwm	FR		z		2		3	2	3
CCM	ESSFwm	FR		z		3		3	2	3
CCM	ESSFwm	FR		z		4		3	2	3
CCM	ESSFwm	FR		z		5		3	2	2
CCM	ESSFwm	FR		z		6		3	2	2
CCM	ESSFwm	FR		z		7		3	2	2
CCM	ESSFwm	RA				2		3	2	3
CCM	ESSFwm	RA				3		3	2	3
CCM	ESSFwm	RA				4		3	2	3
CCM	ESSFwm	RA				5		3	2	2
CCM	ESSFwm	RA				6		3	2	2
CCM	ESSFwm	RA				7		3	2	2
CCM	ESSFwm	RA		k		2		3	2	3
CCM	ESSFwm	RA		k		3		3	2	3
CCM	ESSFwm	RA		k		4		3	2	3
CCM	ESSFwm	RA		k		5		3	2	2
CCM	ESSFwm	RA		k		6		3	2	2
CCM	ESSFwm	RA		k		7		3	2	2
CCM	ESSFwm	RA		w		2		3	2	3
CCM	ESSFwm	RA		w		3		3	2	3
CCM	ESSFwm	RA		w		4		3	2	3
CCM	ESSFwm	RA		w		5		3	2	2
CCM	ESSFwm	RA		w		6		3	2	2
CCM	ESSFwm	RA		w		7		3	2	2
CCM	ESSFwm	RO						4	4	4
CCM	ESSFwm	RO		k				4	4	4
CCM	ESSFwm	RO		q				4	4	4
CCM	ESSFwm	RO		w				4	4	4
CCM	ESSFwm	RO		z				4	4	4
CCM	ESSFwm	SM				2		2	2	4
CCM	ESSFwm	SM		k		2		2	2	4
CCM	ESSFwm	SM		w		2		2	2	4
CCM	ESSFwm	TA						3	3	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwm	TA		k				3	3	3
CCM	ESSFwm	TA		q				3	3	3
CCM	ESSFwm	TA		w				3	3	3
CCM	ESSFwm	TA		z				3	3	3
CCM	ESSFwmp	AC						3	3	3
CCM	ESSFwmp	AC		k		2		3	3	3
CCM	ESSFwmp	AC		q				3	3	3
CCM	ESSFwmp	AC		w				2	3	3
CCM	ESSFwmp	AC		z				3	3	3
CCM	ESSFwmp	AR				2		2	2	3
CCM	ESSFwmp	AR		k		2		2	2	3
CCM	ESSFwmp	AR		q		2		2	2	3
CCM	ESSFwmp	AR		w		2		1	2	3
CCM	ESSFwmp	AR		z		2		1	2	3
CCM	ESSFwmp	FA				2		2	3	3
CCM	ESSFwmp	FA				3		3	3	3
CCM	ESSFwmp	FA		k		2		2	3	2
CCM	ESSFwmp	FA		k		3		3	3	1
CCM	ESSFwmp	FA		w		2		1	3	2
CCM	ESSFwmp	FA		w		3		2	3	1
CCM	ESSFwmp	FM				2		3	3	
CCM	ESSFwmp	FM				3		3	3	
CCM	ESSFwmp	FM				4		3	3	
CCM	ESSFwmp	FM				5		3	3	
CCM	ESSFwmp	FM				6		3	3	
CCM	ESSFwmp	FM				7		3	3	
CCM	ESSFwmp	FM		k		2		3	3	
CCM	ESSFwmp	FM		k		3		3	3	
CCM	ESSFwmp	FM		k		4		3	3	
CCM	ESSFwmp	FM		k		5		3	3	
CCM	ESSFwmp	FM		k		6		3	3	
CCM	ESSFwmp	FM		k		7		3	3	
CCM	ESSFwmp	FM		q		2		3	3	
CCM	ESSFwmp	FM		q		3		3	3	
CCM	ESSFwmp	FM		q		4		3	3	
CCM	ESSFwmp	FM		q		5		3	3	
CCM	ESSFwmp	FM		q		6		3	3	
CCM	ESSFwmp	FM		q		7		3	3	
CCM	ESSFwmp	FM		w		2		3	3	
CCM	ESSFwmp	FM		w		3		3	3	
CCM	ESSFwmp	FM		w		4		3	3	
CCM	ESSFwmp	FM		w		5		3	3	
CCM	ESSFwmp	FM		w		6		3	3	
CCM	ESSFwmp	FM		w		7		3	3	
CCM	ESSFwmp	FM		z		2		3	3	
CCM	ESSFwmp	FM		z		3		3	3	
CCM	ESSFwmp	FM		z		4		3	3	
CCM	ESSFwmp	FM		z		5		3	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwmp	FM		z		6		3	3	
CCM	ESSFwmp	FM		z		7		3	3	
CCM	ESSFwmp	FS				2		3	2	
CCM	ESSFwmp	FS				3		3	2	
CCM	ESSFwmp	FS				4		3	3	
CCM	ESSFwmp	FS				5		3	3	
CCM	ESSFwmp	FS				6		3	3	
CCM	ESSFwmp	FS				7		3	3	
CCM	ESSFwmp	FS		k		2		3	3	2
CCM	ESSFwmp	FS		k		3		3	3	2
CCM	ESSFwmp	FS		k		4		3	3	3
CCM	ESSFwmp	FS		k		5		3	3	3
CCM	ESSFwmp	FS		k		6		3	3	3
CCM	ESSFwmp	FS		k		7		3	3	3
CCM	ESSFwmp	FS		w		2		3	3	2
CCM	ESSFwmp	FS		w		3		3	3	2
CCM	ESSFwmp	FS		w		4		3	3	3
CCM	ESSFwmp	FS		w		5		3	3	3
CCM	ESSFwmp	FS		w		6		3	3	3
CCM	ESSFwmp	FS		w		7		3	3	3
CCM	ESSFwmp	FS		z		2		3	3	2
CCM	ESSFwmp	FS		z		3		3	3	2
CCM	ESSFwmp	FS		z		4		3	3	3
CCM	ESSFwmp	FS		z		5		3	3	3
CCM	ESSFwmp	FS		z		6		3	3	3
CCM	ESSFwmp	FS		z		7		3	3	3
CCM	ESSFwmp	GS		k				4	4	
CCM	ESSFwmp	GS		q				4	4	
CCM	ESSFwmp	GS		w				4	4	
CCM	ESSFwmp	GS		z				4	4	
CCM	ESSFwmp	MN						4	4	
CCM	ESSFwmp	MN		k				4	4	
CCM	ESSFwmp	MN		q				4	4	
CCM	ESSFwmp	MN		w				4	4	
CCM	ESSFwmp	MN		z				4	4	
CCM	ESSFwmp	RO						4	4	
CCM	ESSFwmp	RO		k				4	4	
CCM	ESSFwmp	RO		q				4	4	
CCM	ESSFwmp	RO		w				4	4	
CCM	ESSFwmp	RO		z				4	4	
CCM	ESSFwmp	TA						3	3	3
CCM	ESSFwmp	TA		k				3	3	3
CCM	ESSFwmp	TA		q				3	3	3
CCM	ESSFwmp	TA		w				3	3	3
CCM	ESSFwmp	TA		z				3	3	3
CCM	ESSFwmu	AC						3	3	3
CCM	ESSFwmu	AC		k		2		3	3	3
CCM	ESSFwmu	AC		q				3	3	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwmu	AC		w				2	3	3
CCM	ESSFwmu	AC		z				3	3	3
CCM	ESSFwmu	AR				2		2	2	3
CCM	ESSFwmu	AR		k		2		2	2	3
CCM	ESSFwmu	AR		q		2		2	2	3
CCM	ESSFwmu	AR		w		2		1	2	3
CCM	ESSFwmu	AR		z		2		1	2	3
CCM	ESSFwmu	FB				2		3	2	4
CCM	ESSFwmu	FB				3		3	2	3
CCM	ESSFwmu	FB				4		3	3	2
CCM	ESSFwmu	FB				5		3	3	1
CCM	ESSFwmu	FB				6		3	3	1
CCM	ESSFwmu	FB				7		3	3	1
CCM	ESSFwmu	FB		k		2		3	2	4
CCM	ESSFwmu	FB		k		3		3	2	3
CCM	ESSFwmu	FB		k		4		3	3	2
CCM	ESSFwmu	FB		k		5		3	3	1
CCM	ESSFwmu	FB		k		6		3	3	1
CCM	ESSFwmu	FB		k		7		3	3	1
CCM	ESSFwmu	FB		q		2		3	2	4
CCM	ESSFwmu	FB		q		3		3	2	3
CCM	ESSFwmu	FB		q		4		3	3	2
CCM	ESSFwmu	FB		q		5		3	3	1
CCM	ESSFwmu	FB		q		6		3	3	1
CCM	ESSFwmu	FB		q		7		3	3	1
CCM	ESSFwmu	FB		w		2		3	2	4
CCM	ESSFwmu	FB		w		3		3	2	3
CCM	ESSFwmu	FB		w		4		3	3	2
CCM	ESSFwmu	FB		w		5		3	3	1
CCM	ESSFwmu	FB		w		6		3	3	1
CCM	ESSFwmu	FB		w		7		3	3	1
CCM	ESSFwmu	FB		z		2		3	2	4
CCM	ESSFwmu	FB		z		3		3	2	3
CCM	ESSFwmu	FB		z		4		3	3	2
CCM	ESSFwmu	FB		z		5		3	3	1
CCM	ESSFwmu	FB		z		6		3	3	1
CCM	ESSFwmu	FB		z		7		3	3	1
CCM	ESSFwmu	FR				2		3	2	4
CCM	ESSFwmu	FR				3		3	2	3
CCM	ESSFwmu	FR				4		3	3	2
CCM	ESSFwmu	FR				5		3	3	1
CCM	ESSFwmu	FR				6		3	3	1
CCM	ESSFwmu	FR				7		3	3	1
CCM	ESSFwmu	FR		k		2		3	2	4
CCM	ESSFwmu	FR		k		3		3	2	3
CCM	ESSFwmu	FR		k		4		3	3	2
CCM	ESSFwmu	FR		k		5		3	3	1
CCM	ESSFwmu	FR		k		6		3	3	1

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwmu	FR		k		7		3	3	1
CCM	ESSFwmu	FR		q		2		3	2	4
CCM	ESSFwmu	FR		q		3		3	2	3
CCM	ESSFwmu	FR		q		4		3	3	2
CCM	ESSFwmu	FR		q		5		3	3	1
CCM	ESSFwmu	FR		q		6		3	3	1
CCM	ESSFwmu	FR		q		7		3	3	1
CCM	ESSFwmu	FR		w		2		3	2	4
CCM	ESSFwmu	FR		w		3		3	2	3
CCM	ESSFwmu	FR		w		4		3	3	2
CCM	ESSFwmu	FR		w		5		3	3	1
CCM	ESSFwmu	FR		w		6		3	3	1
CCM	ESSFwmu	FR		w		7		3	3	1
CCM	ESSFwmu	FR		z		2		3	2	4
CCM	ESSFwmu	FR		z		3		3	2	3
CCM	ESSFwmu	FR		z		4		3	3	2
CCM	ESSFwmu	FR		z		5		3	3	1
CCM	ESSFwmu	FR		z		6		3	3	1
CCM	ESSFwmu	FR		z		7		3	3	1
CCM	ESSFwmu	GS						4	4	
CCM	ESSFwmu	GS		k				4	4	
CCM	ESSFwmu	GS		q				4	4	
CCM	ESSFwmu	GS		w				4	4	
CCM	ESSFwmu	MN						4	4	
CCM	ESSFwmu	MN		k				4	4	
CCM	ESSFwmu	MN		q				4	4	
CCM	ESSFwmu	MN		w				4	4	
CCM	ESSFwmu	RO						4	4	
CCM	ESSFwmu	RO		k				4	4	
CCM	ESSFwmu	RO		q				4	4	
CCM	ESSFwmu	RO		w				4	4	
CCM	ESSFwmu	RO		z				4	4	
CCM	ESSFwmu	TA						3	3	3
CCM	ESSFwmu	TA		k				3	3	3
CCM	ESSFwmu	TA		q				3	3	3
CCM	ESSFwmu	TA		w				3	3	3
CCM	ESSFwmu	TA		z				3	3	3
CCM	ESSFwmu	WE						2	2	4
CCM	ESSFwmu	WE		k				2	2	4
CCM	ESSFwmu	WH				2		2	3	3
CCM	ESSFwmu	WH				3		2	2	3
CCM	ESSFwmu	WH				4		2	2	2
CCM	ESSFwmu	WH				5		2	2	2
CCM	ESSFwmu	WH				6		2	3	1
CCM	ESSFwmu	WH				7		2	3	1
CCM	ESSFwmu	WH		k		2		2	3	3
CCM	ESSFwmu	WH		k		3		2	2	3
CCM	ESSFwmu	WH		k		4		2	2	2

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ESSFwmu	WH		k		5		2	2	2
CCM	ESSFwmu	WH		k		6		2	3	1
CCM	ESSFwmu	WH		k		7		2	3	1
CCM	ESSFwmu	WH		q		2		2	3	3
CCM	ESSFwmu	WH		q		3		2	2	3
CCM	ESSFwmu	WH		q		4		2	2	2
CCM	ESSFwmu	WH		q		5		2	2	2
CCM	ESSFwmu	WH		q		6		2	3	1
CCM	ESSFwmu	WH		q		7		2	3	1
CCM	ESSFwmu	WH		w		2		3	2	3
CCM	ESSFwmu	WH		w		3		3	1	3
CCM	ESSFwmu	WH		w		4		3	1	2
CCM	ESSFwmu	WH		w		5		3	2	2
CCM	ESSFwmu	WH		w		6		3	2	1
CCM	ESSFwmu	WH		w		7		3	2	1
CCM	ESSFwmu	WH		z		2		2	3	3
CCM	ESSFwmu	WH		z		3		2	2	3
CCM	ESSFwmu	WH		z		4		2	2	2
CCM	ESSFwmu	WH		z		5		2	2	2
CCM	ESSFwmu	WH		z		6		2	3	1
CCM	ESSFwmu	WH		z		7		2	3	1
CCM	ESSFwmu	WS						2	2	3
CCM	ESSFwmu	WS		q				2	2	3
CCM	ESSFwmu	WS		z				2	2	3
CCM	ICHdw	AC		k		2		1	2	
CCM	ICHdw	AC		k		3		1	2	
CCM	ICHdw	AC		q						
CCM	ICHdw	AC		w		2		1	2	
CCM	ICHdw	AC		w		3		1	3	
CCM	ICHdw	AR				2		1	2	
CCM	ICHdw	AR				3		1	2	
CCM	ICHdw	AR		k		2		1	2	
CCM	ICHdw	AR		k		3		1	2	
CCM	ICHdw	AR		q		2		1	2	
CCM	ICHdw	AR		q		3		1	2	
CCM	ICHdw	AR		w		2		1	2	
CCM	ICHdw	AR		w		3		1	2	
CCM	ICHdw	AR		z		2		1	2	
CCM	ICHdw	AR		z		3		1	2	
CCM	ICHdw	DO						3	4	
CCM	ICHdw	DO		k				3	4	
CCM	ICHdw	DO		q				3	4	
CCM	ICHdw	DO		w				3	4	
CCM	ICHdw	DO		z				3	4	
CCM	ICHdw	HD				2		3	3	
CCM	ICHdw	HD				3		3	3	
CCM	ICHdw	HD				4		3	3	
CCM	ICHdw	HD				5		3	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ICHdw	HD				6		3	3	
CCM	ICHdw	HD				7		3	3	
CCM	ICHdw	RD				2		3	3	
CCM	ICHdw	RD				3		3	3	
CCM	ICHdw	RD				4		3	3	
CCM	ICHdw	RD				5		3	3	
CCM	ICHdw	RD				6		3	3	
CCM	ICHdw	RD				7		3	3	
CCM	ICHdw	RD		k		2		3	3	
CCM	ICHdw	RD		k		3		3	3	
CCM	ICHdw	RD		k		4		3	3	
CCM	ICHdw	RD		k		5		3	3	
CCM	ICHdw	RD		k		6		3	3	
CCM	ICHdw	RD		k		7		3	3	
CCM	ICHdw	RD		w		2		3	3	
CCM	ICHdw	RD		w		3		3	3	
CCM	ICHdw	RD		w		4		3	3	
CCM	ICHdw	RD		w		5		3	3	
CCM	ICHdw	RD		w		6		3	3	
CCM	ICHdw	RD		w		7		3	3	
CCM	ICHdw	RFA						3	3	
CCM	ICHdw	RFA		k				3	3	
CCM	ICHdw	RFA		w				3	3	
CCM	ICHdw	RFB						3	3	
CCM	ICHdw	RFB		k				3	3	
CCM	ICHdw	RFB		q				3	3	
CCM	ICHdw	RFB		w				3	3	
CCM	ICHdw	RO						4	4	
CCM	ICHdw	RO		k				4	4	
CCM	ICHdw	RO		q				4	4	
CCM	ICHdw	RO		w				4	4	
CCM	ICHdw	RO		z				4	4	
CCM	ICHdw	TA						3	3	3
CCM	ICHdw	TA		k				3	3	3
CCM	ICHdw	TA		q				3	3	3
CCM	ICHdw	TA		w				3	3	3
CCM	ICHdw	TA		z				3	3	3
CCM	ICHdw	WS				2		1	2	
CCM	ICHdw	WS				3		1	2	
CCM	ICHdw	WS				4		2	3	
CCM	ICHdw	WS				5		2	3	
CCM	ICHdw	WS				6		2	3	
CCM	ICHdw	WS				7		2	3	
CCM	ICHdw	WS		k		2		1	2	
CCM	ICHdw	WS		k		3		1	2	
CCM	ICHdw	WS		k		4		2	3	
CCM	ICHdw	WS		k		5		2	3	
CCM	ICHdw	WS		k		6		2	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ICHdw	WS		k		7		2	3	
CCM	ICHmw2	AC		k				1	1	
CCM	ICHmw2	AC		q				1	1	
CCM	ICHmw2	AC		w				1	1	
CCM	ICHmw2	AC		z				1	1	
CCM	ICHmw2	AR						1	1	
CCM	ICHmw2	AR		k				1	1	
CCM	ICHmw2	AR		q				1	1	
CCM	ICHmw2	AR		w				1	1	
CCM	ICHmw2	AR		z				1	1	
CCM	ICHmw2	BS				2		2	3	
CCM	ICHmw2	BS				3		2	3	
CCM	ICHmw2	BS				4		3	3	
CCM	ICHmw2	BS				5		3	3	
CCM	ICHmw2	BS				6		3	3	
CCM	ICHmw2	BS				7		3	3	
CCM	ICHmw2	BS		k		2		2	3	
CCM	ICHmw2	BS		k		3		2	3	
CCM	ICHmw2	BS		k		4		3	3	
CCM	ICHmw2	BS		k		5		3	3	
CCM	ICHmw2	BS		k		6		3	3	
CCM	ICHmw2	BS		k		7		3	3	
CCM	ICHmw2	CS				2		1	2	
CCM	ICHmw2	CS				3		1	2	
CCM	ICHmw2	CS				4		2	3	
CCM	ICHmw2	CS				5		2	3	
CCM	ICHmw2	CS				6		2	3	
CCM	ICHmw2	CS				7		2	3	
CCM	ICHmw2	DF						3	3	
CCM	ICHmw2	DF		k				3	3	
CCM	ICHmw2	DF		q				3	3	
CCM	ICHmw2	DF		w				3	3	
CCM	ICHmw2	DF		z				3	3	
CCM	ICHmw2	HF						3	3	
CCM	ICHmw2	HF		k				3	3	
CCM	ICHmw2	HF		w				3	3	
CCM	ICHmw2	HO				2		2	3	
CCM	ICHmw2	HO				3		2	3	
CCM	ICHmw2	HO				4		3	3	
CCM	ICHmw2	HO				5		3	3	
CCM	ICHmw2	HO				6		3	3	
CCM	ICHmw2	HO				7		3	3	
CCM	ICHmw2	HO		k		2		2	3	
CCM	ICHmw2	HO		k		3		2	3	
CCM	ICHmw2	HO		k		4		3	3	
CCM	ICHmw2	HO		k		5		3	3	
CCM	ICHmw2	HO		k		6		3	3	
CCM	ICHmw2	HO		k		7		3	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ICHmw2	HO		q		2		2	3	
CCM	ICHmw2	HO		q		3		2	3	
CCM	ICHmw2	HO		q		4		3	3	
CCM	ICHmw2	HO		q		5		3	3	
CCM	ICHmw2	HO		q		6		3	3	
CCM	ICHmw2	HO		q		7		3	3	
CCM	ICHmw2	HO		w		2		2	3	
CCM	ICHmw2	HO		w		3		2	3	
CCM	ICHmw2	HO		w		4		3	3	
CCM	ICHmw2	HO		w		5		3	3	
CCM	ICHmw2	HO		w		6		3	3	
CCM	ICHmw2	HO		w		7		3	3	
CCM	ICHmw2	HO		z		2		2	3	
CCM	ICHmw2	HO		z		3		2	3	
CCM	ICHmw2	HO		z		4		3	3	
CCM	ICHmw2	HO		z		5		3	3	
CCM	ICHmw2	HO		z		6		3	3	
CCM	ICHmw2	HO		z		7		3	3	
CCM	ICHmw2	RC						3	3	
CCM	ICHmw2	RC		k				3	3	
CCM	ICHmw2	RC		q				3	3	
CCM	ICHmw2	RC		w				3	3	
CCM	ICHmw2	RC		z				3	3	
CCM	ICHmw2	RD						3	3	
CCM	ICHmw2	RF						3	3	
CCM	ICHmw2	RF		k				3	3	
CCM	ICHmw2	RF		q				3	3	
CCM	ICHmw2	RH				2		1	2	
CCM	ICHmw2	RH				3		1	2	
CCM	ICHmw2	RH				4		2	3	
CCM	ICHmw2	RH				5		2	3	
CCM	ICHmw2	RH				6		2	3	
CCM	ICHmw2	RH				7		1	2	
CCM	ICHmw2	RH		k		2		1	2	
CCM	ICHmw2	RH		k		3		1	2	
CCM	ICHmw2	RH		k		4		2	3	
CCM	ICHmw2	RH		k		5		2	3	
CCM	ICHmw2	RH		k		6		2	3	
CCM	ICHmw2	RH		k		7		1	2	
CCM	ICHmw2	RH		w		2		1	2	
CCM	ICHmw2	RH		w		3		1	2	
CCM	ICHmw2	RH		w		4		2	3	
CCM	ICHmw2	RH		w		5		2	3	
CCM	ICHmw2	RH		w		6		2	3	
CCM	ICHmw2	RH		w		7		1	2	
CCM	ICHmw2	RO						4	4	
CCM	ICHmw2	RO		k				4	4	
CCM	ICHmw2	RO		q				4	4	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
CCM	ICHmw2	RO		w				4	4	
CCM	ICHmw2	RO		z				4	4	
CCM	ICHmw2	TA						3	3	
CCM	ICHmw2	TA		k				3	3	
CCM	ICHmw2	TA		q				3	3	
CCM	ICHmw2	TA		w				3	3	
CCM	ICHmw2	TA		z				3	3	
EPM	At	AW						4	3	3
EPM	At	AW		k				4	3	3
EPM	At	AW		w				4	3	3
EPM	At	BP						3	3	3
EPM	At	GS						4	4	
EPM	At	GS		k				4	4	
EPM	At	GS		q				4	4	
EPM	At	GS		w				4	4	
EPM	At	GS		z				4	4	
EPM	At	MN						4	4	
EPM	At	MN		k				4	4	
EPM	At	MN		q				4	4	
EPM	At	MN		w				4	4	
EPM	At	MN		z				4	4	
EPM	At	RO						4	4	
EPM	At	RO		k				4	4	
EPM	At	RO		q				4	4	
EPM	At	RO		w				4	4	
EPM	At	RO		z				4	4	
EPM	At	SL						4	4	
EPM	At	SL		k				4	4	
EPM	At	SL		q				4	4	
EPM	At	SL		w				4	4	
EPM	At	SL		z				4	4	
EPM	At	TA						3	3	3
EPM	At	TA		k				3	3	3
EPM	At	TA		q				3	3	3
EPM	At	TA		w				3	3	3
EPM	At	TA		z				3	3	3
EPM	ESSFdk	AC						3	3	3
EPM	ESSFdk	AC		k				3	3	3
EPM	ESSFdk	AC		q				3	3	3
EPM	ESSFdk	AC		w				2	3	3
EPM	ESSFdk	AC		z				3	3	3
EPM	ESSFdk	AR				2		2	2	3
EPM	ESSFdk	AR		k				2	2	3
EPM	ESSFdk	AR		q		2		2	2	3
EPM	ESSFdk	AR		w				1	2	3
EPM	ESSFdk	AR		z		2		1	2	3
EPM	ESSFdk	DM						3	3	
EPM	ESSFdk	DM		k				3	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdk	DM		q				3	3	
EPM	ESSFdk	DM		w				3	3	
EPM	ESSFdk	DM		z				3	3	
EPM	ESSFdk	FA						3	3	
EPM	ESSFdk	FA		k				3	3	
EPM	ESSFdk	FA		w		2		2	2	
EPM	ESSFdk	FA		w		3		3	2	
EPM	ESSFdk	FA		w		4		3	3	
EPM	ESSFdk	FA		w		5		3	3	
EPM	ESSFdk	FA		w		6		3	3	
EPM	ESSFdk	FA		w		7		3	3	
EPM	ESSFdk	FG				2		3	2	
EPM	ESSFdk	FG				3		3	2	
EPM	ESSFdk	FG				4		3	3	
EPM	ESSFdk	FG				5		3	3	
EPM	ESSFdk	FG				6		3	3	
EPM	ESSFdk	FG				7		3	3	
EPM	ESSFdk	FG		k		2		3	2	
EPM	ESSFdk	FG		k		3		3	2	
EPM	ESSFdk	FG		k		4		3	3	
EPM	ESSFdk	FG		k		5		3	3	
EPM	ESSFdk	FG		k		6		3	3	
EPM	ESSFdk	FG		k		7		3	3	
EPM	ESSFdk	FG		q		2		3	2	
EPM	ESSFdk	FG		q		3		3	2	
EPM	ESSFdk	FG		q		4		3	3	
EPM	ESSFdk	FG		q		5		3	3	
EPM	ESSFdk	FG		q		6		3	3	
EPM	ESSFdk	FG		q		7		3	3	
EPM	ESSFdk	FG		w		2		3	1	
EPM	ESSFdk	FG		w		3		3	1	
EPM	ESSFdk	FG		w		4		3	2	
EPM	ESSFdk	FG		w		5		3	2	
EPM	ESSFdk	FG		w		6		3	2	
EPM	ESSFdk	FG		w		7		3	2	
EPM	ESSFdk	FG		z		2		3	2	
EPM	ESSFdk	FG		z		3		3	2	
EPM	ESSFdk	FG		z		4		3	3	
EPM	ESSFdk	FG		z		5		3	3	
EPM	ESSFdk	FG		z		6		3	3	
EPM	ESSFdk	FG		z		7		3	3	
EPM	ESSFdk	FH				2		2	2	
EPM	ESSFdk	FH				3		2	2	
EPM	ESSFdk	FH				4		3	3	
EPM	ESSFdk	FH				5		3	3	
EPM	ESSFdk	FH				6		3	3	
EPM	ESSFdk	FH				7		3	3	
EPM	ESSFdk	FH		k		2				

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdk	FH				3		2	2	
EPM	ESSFdk	FH				4		2	2	
EPM	ESSFdk	FH				5		3	3	
EPM	ESSFdk	FH				6		3	3	
EPM	ESSFdk	FH				7		3	3	
EPM	ESSFdk	FM				2		3	3	
EPM	ESSFdk	FM				3		3	3	
EPM	ESSFdk	FM				4		3	3	
EPM	ESSFdk	FM				5		3	3	
EPM	ESSFdk	FM				6		3	3	
EPM	ESSFdk	FM				7		3	3	
EPM	ESSFdk	FS				2		3	2	
EPM	ESSFdk	FS				3		3	1	
EPM	ESSFdk	FS				4		3	3	
EPM	ESSFdk	FS				5		3	3	
EPM	ESSFdk	FS				6		3	3	
EPM	ESSFdk	FS				7		3	3	
EPM	ESSFdk	FS		k		2		3	2	
EPM	ESSFdk	FS		k		3		3	1	
EPM	ESSFdk	FS		k		4		3	3	
EPM	ESSFdk	FS		k		5		3	3	
EPM	ESSFdk	FS		k		6		3	3	
EPM	ESSFdk	FS		k		7		3	3	
EPM	ESSFdk	FS		q		2		3	2	
EPM	ESSFdk	FS		q		3		3	1	
EPM	ESSFdk	FS		q		4		3	3	
EPM	ESSFdk	FS		q		5		3	3	
EPM	ESSFdk	FS		q		6		3	3	
EPM	ESSFdk	FS		q		7		3	3	
EPM	ESSFdk	FS		w		2		3	2	
EPM	ESSFdk	FS		w		3		3	1	
EPM	ESSFdk	FS		w		4		3	3	
EPM	ESSFdk	FS		w		5		3	3	
EPM	ESSFdk	FS		w		6		3	3	
EPM	ESSFdk	FS		w		7		3	3	
EPM	ESSFdk	FS		z		2		3	2	
EPM	ESSFdk	FS		z		3		3	1	
EPM	ESSFdk	FS		z		4		3	3	
EPM	ESSFdk	FS		z		5		3	3	
EPM	ESSFdk	FS		z		6		3	3	
EPM	ESSFdk	FS		z		7		3	3	
EPM	ESSFdk	RO						4	4	
EPM	ESSFdk	RO		k				4	4	
EPM	ESSFdk	RO		q				4	4	
EPM	ESSFdk	RO		w				4	4	
EPM	ESSFdk	RO		z				4	4	
EPM	ESSFdk	TA						3	3	3
EPM	ESSFdk	TA		k				3	3	3

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdk	TA		q				3	3	3
EPM	ESSFdk	TA		w				3	3	3
EPM	ESSFdk	TA		z				3	3	3
EPM	ESSFdk	WS				2		1	2	3
EPM	ESSFdk	WS				3		1	2	3
EPM	ESSFdk	WS		k		2		1	2	3
EPM	ESSFdk	WS		k		3		1	2	3
EPM	ESSFdk	WS		w		2		1	2	3
EPM	ESSFdk	WS		w		3		1	2	3
EPM	ESSFdkp	AC				2		2	2	
EPM	ESSFdkp	AC				3		2	2	
EPM	ESSFdkp	AC		k		2		2	2	
EPM	ESSFdkp	AC		k		3		2	2	
EPM	ESSFdkp	AC		q		2		2	2	
EPM	ESSFdkp	AC		q		3		2	2	
EPM	ESSFdkp	AC		w		2		2	2	
EPM	ESSFdkp	AC		w		3		2	2	
EPM	ESSFdkp	AC		z		2		2	2	
EPM	ESSFdkp	AC		z		3		2	2	
EPM	ESSFdkp	AW						3	3	
EPM	ESSFdkp	AW		k				3	3	
EPM	ESSFdkp	AW		q				3	3	
EPM	ESSFdkp	AW		w				3	3	
EPM	ESSFdkp	AW		z				3	3	
EPM	ESSFdkp	EM						3	3	
EPM	ESSFdkp	EM		k				3	3	
EPM	ESSFdkp	EM		q				3	3	
EPM	ESSFdkp	EM		w				3	3	
EPM	ESSFdkp	EM		z				3	3	
EPM	ESSFdkp	GS						6	6	
EPM	ESSFdkp	GS		k				6	6	
EPM	ESSFdkp	GS		q				6	6	
EPM	ESSFdkp	GS		w				6	6	
EPM	ESSFdkp	GS		z				6	6	
EPM	ESSFdkp	LM						3	3	
EPM	ESSFdkp	LM		k				3	3	
EPM	ESSFdkp	LM		w				3	3	
EPM	ESSFdkp	MN						3	3	
EPM	ESSFdkp	MN		k				4	4	
EPM	ESSFdkp	MN		q				4	4	
EPM	ESSFdkp	MN		w				4	4	
EPM	ESSFdkp	MN		z				4	4	
EPM	ESSFdkp	RO						6	6	
EPM	ESSFdkp	RO		k				6	6	
EPM	ESSFdkp	RO		q				6	6	
EPM	ESSFdkp	RO		w				6	6	
EPM	ESSFdkp	RO		z				6	6	
EPM	ESSFdkp	TA						5	5	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdkp	TA		k				5	5	
EPM	ESSFdkp	TA		q				5	5	
EPM	ESSFdkp	TA		w				5	5	
EPM	ESSFdkp	TA		z				5	5	
EPM	ESSFdkp	WF				2		5	5	
EPM	ESSFdkp	WF				3		3	3	
EPM	ESSFdkp	WF				4		3	2	
EPM	ESSFdkp	WF				5		3	2	
EPM	ESSFdkp	WF				6		3	2	
EPM	ESSFdkp	WF				7		3	2	
EPM	ESSFdkp	WF		k		2		3	2	
EPM	ESSFdkp	WF		k		3		3	2	
EPM	ESSFdkp	WF		k		4		3	2	
EPM	ESSFdkp	WF		k		5		3	2	
EPM	ESSFdkp	WF		k		6		3	2	
EPM	ESSFdkp	WF		k		7		3	2	
EPM	ESSFdkp	WF		z		2		3	2	
EPM	ESSFdkp	WF		z		3		3	2	
EPM	ESSFdkp	WF		z		4		3	2	
EPM	ESSFdkp	WF		z		5		3	2	
EPM	ESSFdkp	WF		z		6		3	2	
EPM	ESSFdkp	WF		z		7		3	2	
EPM	ESSFdkp	YW		w		2		3	2	
EPM	ESSFdkp	YW		z		2		3	2	
EPM	ESSFdku	AC				2		1	2	
EPM	ESSFdku	AC				3		1	2	
EPM	ESSFdku	AC		k		2		2	2	
EPM	ESSFdku	AC				3		2	2	
EPM	ESSFdku	AC		q		2		2	2	
EPM	ESSFdku	AC				3		2	2	
EPM	ESSFdku	AC		w		2		1	2	
EPM	ESSFdku	AC		w		3		1	2	
EPM	ESSFdku	AC		z		2		1	2	
EPM	ESSFdku	AC				3		1	2	
EPM	ESSFdku	AR				2		2	2	3
EPM	ESSFdku	AR		k		2		2	2	3
EPM	ESSFdku	AR		q		2		2	2	3
EPM	ESSFdku	AR		w		2		1	2	3
EPM	ESSFdku	AR		z		2		1	2	3
EPM	ESSFdku	FG				2		3	3	
EPM	ESSFdku	FG				3		3	3	
EPM	ESSFdku	FG				4		3	3	
EPM	ESSFdku	FG				5		3	3	
EPM	ESSFdku	FG				6		3	3	
EPM	ESSFdku	FG				7		3	3	
EPM	ESSFdku	FG		k		2		3	3	
EPM	ESSFdku	FG		k		3		3	2	
EPM	ESSFdku	FG		k		4		3	3	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdku	FG		k		5		3	3	
EPM	ESSFdku	FG		k		6		3	3	
EPM	ESSFdku	FG		k		7		3	3	
EPM	ESSFdku	FG		q		2		3	3	
EPM	ESSFdku	FG		q		3		3	3	
EPM	ESSFdku	FG		q		4		3	3	
EPM	ESSFdku	FG		q		5		3	3	
EPM	ESSFdku	FG		q		6		3	3	
EPM	ESSFdku	FG		q		7		3	3	
EPM	ESSFdku	FG		w		2		3	2	
EPM	ESSFdku	FG		w		3		3	1	
EPM	ESSFdku	FG		w		4		3	2	
EPM	ESSFdku	FG		w		5		3	2	
EPM	ESSFdku	FG		w		6		3	2	
EPM	ESSFdku	FG		w		7		3	2	
EPM	ESSFdku	FG		z		2		3	2	
EPM	ESSFdku	FG		z		3		3	1	
EPM	ESSFdku	FG		z		4		3	2	
EPM	ESSFdku	FG		z		5		3	2	
EPM	ESSFdku	FG		z		6		3	2	
EPM	ESSFdku	FG		z		7		3	2	
EPM	ESSFdku	FH						2	2	
EPM	ESSFdku	FH		k				2	2	
EPM	ESSFdku	GS						2	2	
EPM	ESSFdku	GS		k				2	2	
EPM	ESSFdku	HG						3	3	
EPM	ESSFdku	HG		k				3	3	
EPM	ESSFdku	HG		q				3	3	
EPM	ESSFdku	HG		w				3	3	
EPM	ESSFdku	LG						3	3	
EPM	ESSFdku	LG		k				3	3	
EPM	ESSFdku	LG		q				3	3	
EPM	ESSFdku	LG		w				3	3	
EPM	ESSFdku	LH						3	3	
EPM	ESSFdku	LH				2		3	3	
EPM	ESSFdku	LH				3		3	3	
EPM	ESSFdku	LH				4		3	3	
EPM	ESSFdku	LH				5		3	3	
EPM	ESSFdku	LH				6		3	3	
EPM	ESSFdku	LH				7		3	3	
EPM	ESSFdku	LH		k		2		3	3	
EPM	ESSFdku	LH		k		3		3	2	
EPM	ESSFdku	LH		k		4		3	3	
EPM	ESSFdku	LH		k		5		3	3	
EPM	ESSFdku	LH		k		6		3	3	
EPM	ESSFdku	LH		k		7		3	3	
EPM	ESSFdku	LH		w		2		3	2	
EPM	ESSFdku	LH		w		3		3	1	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	ESSFdku	LH		w		4		3	2	
EPM	ESSFdku	LH		w		5		3	2	
EPM	ESSFdku	LH		w		6		3	2	
EPM	ESSFdku	LH		w		7		3	2	
EPM	ESSFdku	LH		z		2		3	2	
EPM	ESSFdku	LH		z		3		3	1	
EPM	ESSFdku	LH		z		4		3	2	
EPM	ESSFdku	LH		z		5		3	2	
EPM	ESSFdku	LH		z		6		3	2	
EPM	ESSFdku	LH		z		7		3	2	
EPM	ESSFdku	LM								
EPM	ESSFdku	LM		k				3	3	
EPM	ESSFdku	LM		q				3	3	
EPM	ESSFdku	LM		w				3	3	
EPM	ESSFdku	LM		z				3	3	
EPM	ESSFdku	MN						3	3	
EPM	ESSFdku	MN		k				3	3	
EPM	ESSFdku	MN		q				3	3	
EPM	ESSFdku	MN		w				3	3	
EPM	ESSFdku	MN		z				3	3	
EPM	ESSFdku	PJ						3	3	
EPM	ESSFdku	PJ		k				3	3	
EPM	ESSFdku	PJ		q				3	3	
EPM	ESSFdku	PJ		w				3	3	
EPM	ESSFdku	PJ		z				3	3	
EPM	ESSFdku	PW						3	3	
EPM	ESSFdku	PW		k				3	3	
EPM	ESSFdku	RO						4	4	
EPM	ESSFdku	RO		k				4	4	
EPM	ESSFdku	RO		q				4	4	
EPM	ESSFdku	RO		w				4	4	
EPM	ESSFdku	RO		z				4	4	
EPM	ESSFdku	TA						3	3	
EPM	ESSFdku	TA		k				3	3	
EPM	ESSFdku	TA		q				3	3	
EPM	ESSFdku	TA		w				3	3	
EPM	ESSFdku	TA		z				3	3	
EPM	ESSFdku	WS				2		1	2	
EPM	ESSFdku	WS				3		1	2	
EPM	ESSFdku	WS		k		2		1	2	
EPM	ESSFdku	WS		k		3		1	2	
EPM	ESSFdku	WS		w		2		1	2	
EPM	ESSFdku	WS		w		3		1	2	
EPM	MSdk	AC				2		2	2	
EPM	MSdk	AC				3		2	2	
EPM	MSdk	AC		k		2		2	2	
EPM	MSdk	AC		k		3		2	2	
EPM	MSdk	AC		q		2		2	2	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	MSdk	AC		q		3		2	2	
EPM	MSdk	AC		w		2		2	2	
EPM	MSdk	AC		w		3		2	2	
EPM	MSdk	AC		z		2		2	2	
EPM	MSdk	AC		z		3		2	2	
EPM	MSdk	AR				2		1	2	
EPM	MSdk	AR				3		1	2	
EPM	MSdk	AR		k		2		1	2	
EPM	MSdk	AR		k		3		1	2	
EPM	MSdk	AR		q		2		1	2	
EPM	MSdk	AR		q		3		1	2	
EPM	MSdk	AR		w		2		1	2	
EPM	MSdk	AR		w		3		1	2	
EPM	MSdk	AR		z		2		1	2	
EPM	MSdk	AR		z		3		1	2	
EPM	MSdk	LJ		k						
EPM	MSdk	LJ		w				3	3	
EPM	MSdk	LJ		z				3	3	
EPM	MSdk	LP						3	3	
EPM	MSdk	LP		k				3	3	
EPM	MSdk	LP		w				3	3	
EPM	MSdk	RO						4	4	
EPM	MSdk	RO		k				4	4	
EPM	MSdk	RO		q				4	4	
EPM	MSdk	RO		w				4	4	
EPM	MSdk	RO		z				4	4	
EPM	MSdk	SB						2	3	
EPM	MSdk	SB		k				2	3	
EPM	MSdk	SB		w				2	3	
EPM	MSdk	SG						3	3	
EPM	MSdk	SG		k				3	3	
EPM	MSdk	SG		w				3	3	
EPM	MSdk	SH						1	2	
EPM	MSdk	SS						3	3	
EPM	MSdk	SS		k				3	3	
EPM	MSdk	SS		w				3	3	
EPM	MSdk	SW				2		3	3	
EPM	MSdk	SW		k				3	3	
EPM	MSdk	SW		q				3	3	
EPM	MSdk	SW		w				3	3	
EPM	MSdk	SW		z				3	3	
EPM	MSdk	TA						3	3	
EPM	MSdk	TA		k				3	3	
EPM	MSdk	TA		q				3	3	
EPM	MSdk	TA		w				3	3	
EPM	MSdk	TA		z				3	3	
EPM	MSdk	WS				2		1	2	
EPM	MSdk	WS				3		1	2	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	SPRING	SU/FALL	SC
EPM	MSdk	WS		w		2		1	2	
EPM	MSdk	WS		w		3		1	2	

APPENDIX F

Habitat Ratings for Least Chipmunk

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	At	AW						u	
CCM	At	AW		k				x	
CCM	At	AW		w				u	
CCM	At	BP						x	
CCM	At	GS						x	
CCM	At	GS		k				x	
CCM	At	GS		q				x	
CCM	At	GS		w				x	
CCM	At	GS		z				x	
CCM	At	MN						x	
CCM	At	MN		k				x	
CCM	At	MN		q				x	
CCM	At	MN		w				x	
CCM	At	MN		z				x	
CCM	At	RO						u	
CCM	At	RO		k				x	
CCM	At	RO		q				x	
CCM	At	RO		w				u	
CCM	At	RO		z				u	
CCM	At	SL						x	
CCM	At	SL		k				x	
CCM	At	SL		q				x	
CCM	At	SL		w				x	
CCM	At	SL		z				x	
CCM	At	TA						u	if near vegetated feeding areas
CCM	At	TA		k				x	
CCM	At	TA		q				x	
CCM	At	TA		w				u	if near vegetated feeding areas
CCM	At	TA		z				u	if near vegetated feeding areas
CCM	ESSFwm	AC	77					x	
CCM	ESSFwm	AC	77	k				x	
CCM	ESSFwm	AC	77	q				x	
CCM	ESSFwm	AC	77	w				x	
CCM	ESSFwm	AC	77	z				x	
CCM	ESSFwm	AR	75					x	
CCM	ESSFwm	AR	75	k				x	
CCM	ESSFwm	AR	75	q				x	
CCM	ESSFwm	AR	75	w				x	
CCM	ESSFwm	AR	75	z				x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	ESSFwm	FA						x	
CCM	ESSFwm	FA		k				x	
CCM	ESSFwm	FA		w				x	
CCM	ESSFwm	FG	02					x	
CCM	ESSFwm	FG	02	k				x	
CCM	ESSFwm	FG	02	q				x	
CCM	ESSFwm	FG	02	w				x	
CCM	ESSFwm	FG	02	z				x	
CCM	ESSFwm	FH	04					x	
CCM	ESSFwm	FQ						x	
CCM	ESSFwm	FQ		k				x	
CCM	ESSFwm	FQ		q				x	
CCM	ESSFwm	FQ		w				x	
CCM	ESSFwm	FR						x	
CCM	ESSFwm	FR		k				x	
CCM	ESSFwm	FR		q				x	
CCM	ESSFwm	FR		w				x	
CCM	ESSFwm	FR		z				x	
CCM	ESSFwm	RA						x	
CCM	ESSFwm	RA		k				x	
CCM	ESSFwm	RA		w				x	
CCM	ESSFwm	RO	99					x	
CCM	ESSFwm	RO	99	k				x	
CCM	ESSFwm	RO	99	q				x	
CCM	ESSFwm	RO	99	w				x	
CCM	ESSFwm	RO	99	z				x	
CCM	ESSFwm	SM	66					x	
CCM	ESSFwm	SM	66	k				x	
CCM	ESSFwm	SM	66	w				x	
CCM	ESSFwm	TA	44					x	
CCM	ESSFwm	TA	44	k				x	
CCM	ESSFwm	TA	44	q				x	
CCM	ESSFwm	TA	44	w				x	
CCM	ESSFwm	TA	44	z				x	
CCM	ESSFwmp	AC						x	
CCM	ESSFwmp	AC		k				x	
CCM	ESSFwmp	AC		q				x	
CCM	ESSFwmp	AC		w				x	
CCM	ESSFwmp	AC		z				x	
CCM	ESSFwmp	AR						x	
CCM	ESSFwmp	AR		k				x	
CCM	ESSFwmp	AR		q				x	
CCM	ESSFwmp	AR		w				x	
CCM	ESSFwmp	AR		z				x	
CCM	ESSFwmp	FA						x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	ESSFwmp	FA		k				x	
CCM	ESSFwmp	FA		q				x	
CCM	ESSFwmp	FA		w				x	
CCM	ESSFwmp	FA		z				x	
CCM	ESSFwmp	FM						u	
CCM	ESSFwmp	FM		k				x	
CCM	ESSFwmp	FM		q				x	
CCM	ESSFwmp	FM		w				u	
CCM	ESSFwmp	FM		z				u	
CCM	ESSFwmp	FS						u	
CCM	ESSFwmp	FS		k				x	
CCM	ESSFwmp	FS		w				u	
CCM	ESSFwmp	FS		z				u	
CCM	ESSFwmp	GS						x	
CCM	ESSFwmp	GS		k				x	
CCM	ESSFwmp	GS		q				x	
CCM	ESSFwmp	GS		w				x	
CCM	ESSFwmp	GS		z				x	
CCM	ESSFwmp	MN						x	
CCM	ESSFwmp	MN		k				x	
CCM	ESSFwmp	MN		q				x	
CCM	ESSFwmp	MN		w				x	
CCM	ESSFwmp	MN		z				x	
CCM	ESSFwmp	RO						u	
CCM	ESSFwmp	RO		k				x	
CCM	ESSFwmp	RO		q				x	
CCM	ESSFwmp	RO		w				u	
CCM	ESSFwmp	RO		z				u	
CCM	ESSFwmp	TA						u	
CCM	ESSFwmp	TA		k				x	
CCM	ESSFwmp	TA		q				x	
CCM	ESSFwmp	TA		w				u	
CCM	ESSFwmp	TA		z				u	
CCM	ESSFwmu	AC	77					x	
CCM	ESSFwmu	AC	77	k				x	
CCM	ESSFwmu	AC	77	q				x	
CCM	ESSFwmu	AC	77	w				x	
CCM	ESSFwmu	AC	77	z				x	
CCM	ESSFwmu	AR	75					x	
CCM	ESSFwmu	AR	75	k				x	
CCM	ESSFwmu	AR	75	q				x	
CCM	ESSFwmu	AR	75	w				x	
CCM	ESSFwmu	AR	75	z				x	
CCM	ESSFwmu	FB	01					x	
CCM	ESSFwmu	FB	01	k				x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	ESSFwmu	FB	01	q				x	
CCM	ESSFwmu	FB	01	w				x	
CCM	ESSFwmu	FB	01	z				x	
CCM	ESSFwmu	FR	03					x	
CCM	ESSFwmu	FR	03	k				x	
CCM	ESSFwmu	FR	03	q				x	
CCM	ESSFwmu	FR	03	w				x	
CCM	ESSFwmu	FR	03	z				x	
CCM	ESSFwmu	GS	88					x	
CCM	ESSFwmu	GS	88	k				x	
CCM	ESSFwmu	GS	88	q				x	
CCM	ESSFwmu	GS	88	w				x	
CCM	ESSFwmu	MN						x	
CCM	ESSFwmu	MN		k				x	
CCM	ESSFwmu	MN		q				x	
CCM	ESSFwmu	MN		w				x	
CCM	ESSFwmu	RO	99					x	
CCM	ESSFwmu	RO	99	k				x	
CCM	ESSFwmu	RO	99	q				x	
CCM	ESSFwmu	RO	99	w				x	
CCM	ESSFwmu	RO	99	z				x	
CCM	ESSFwmu	TA	44					x	
CCM	ESSFwmu	TA	44	k				x	
CCM	ESSFwmu	TA	44	q				x	
CCM	ESSFwmu	TA	44	w				x	
CCM	ESSFwmu	TA	44	z				x	
CCM	ESSFwmu	WE	06					x	
CCM	ESSFwmu	WE	06	k				x	
CCM	ESSFwmu	WH	02					x	
CCM	ESSFwmu	WH	02	k				x	
CCM	ESSFwmu	WH	02	q				x	
CCM	ESSFwmu	WH	02	w				x	
CCM	ESSFwmu	WH	02	z				x	
CCM	ESSFwmu	WS	08					x	
CCM	ESSFwmu	WS	08	q				x	
CCM	ESSFwmu	WS	08	z				x	
CCM	ICHdw	AC	77	k				x	
CCM	ICHdw	AC	77	q				x	
CCM	ICHdw	AC	77	w				x	
CCM	ICHdw	AR						x	
CCM	ICHdw	AR		k				x	
CCM	ICHdw	AR		q				x	
CCM	ICHdw	AR		w				x	
CCM	ICHdw	AR		z				x	
CCM	ICHdw	DO	02					x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	ICHdw	DO	02	k				x	
CCM	ICHdw	DO	02	q				x	
CCM	ICHdw	DO	02	w				x	
CCM	ICHdw	DO	02	z				x	
CCM	ICHdw	HD	03					x	
CCM	ICHdw	RD	03					x	
CCM	ICHdw	RD	03	k				x	
CCM	ICHdw	RD	03	w				x	
CCM	ICHdw	RFA	01a					x	
CCM	ICHdw	RFA	01a	k				x	
CCM	ICHdw	RFA	01a	w				x	
CCM	ICHdw	RFB	01b					x	
CCM	ICHdw	RFB	01b	k				x	
CCM	ICHdw	RFB	01b	q				x	
CCM	ICHdw	RFB	01b	w				x	
CCM	ICHdw	RO	99					x	
CCM	ICHdw	RO	99	k				x	
CCM	ICHdw	RO	99	q				x	
CCM	ICHdw	RO	99	w				x	
CCM	ICHdw	RO	99	z				x	
CCM	ICHdw	TA	44					x	
CCM	ICHdw	TA	44	k				x	
CCM	ICHdw	TA	44	q				x	
CCM	ICHdw	TA	44	w				x	
CCM	ICHdw	TA	44	z				x	
CCM	ICHdw	WS	66					x	
CCM	ICHdw	WS	66	k				x	
CCM	ICHmw2	AC	77	k				x	
CCM	ICHmw2	AC	77	q				x	
CCM	ICHmw2	AC	77	w				x	
CCM	ICHmw2	AC	77	z				x	
CCM	ICHmw2	AR						x	
CCM	ICHmw2	AR		k				x	
CCM	ICHmw2	AR		q				x	
CCM	ICHmw2	AR		w				x	
CCM	ICHmw2	AR		z				x	
CCM	ICHmw2	BS	09					x	
CCM	ICHmw2	BS	09	k				x	
CCM	ICHmw2	CS	08					x	
CCM	ICHmw2	DF	03					x	
CCM	ICHmw2	DF	03	k				x	
CCM	ICHmw2	DF	03	q				x	
CCM	ICHmw2	DF	03	w				x	
CCM	ICHmw2	DF	03	z				x	
CCM	ICHmw2	HF	01					x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
CCM	ICHmw2	HF	01	k				x	
CCM	ICHmw2	HF	01	w				x	
CCM	ICHmw2	HO	05					x	
CCM	ICHmw2	HO	05	k				x	
CCM	ICHmw2	HO	05	q				x	
CCM	ICHmw2	HO	05	w				x	
CCM	ICHmw2	HO	05	z				x	
CCM	ICHmw2	RC	02					x	
CCM	ICHmw2	RC	02	k				x	
CCM	ICHmw2	RC	02	q				x	
CCM	ICHmw2	RC	02	w				x	
CCM	ICHmw2	RC	02	z				x	
CCM	ICHmw2	RD	06					x	
CCM	ICHmw2	RF	04					x	
CCM	ICHmw2	RF	04	k				x	
CCM	ICHmw2	RF	04	q				x	
CCM	ICHmw2	RH	07					x	
CCM	ICHmw2	RH	07	k				x	
CCM	ICHmw2	RH	07	w				x	
CCM	ICHmw2	RO	99					x	
CCM	ICHmw2	RO	99	k				x	
CCM	ICHmw2	RO	99	q				x	
CCM	ICHmw2	RO	99	w				x	
CCM	ICHmw2	RO	99	z				x	
CCM	ICHmw2	TA	44					x	
CCM	ICHmw2	TA	44	k				x	
CCM	ICHmw2	TA	44	q				x	
CCM	ICHmw2	TA	44	w				x	
CCM	ICHmw2	TA	44	z				x	
EPM	At	AW						u	
EPM	At	AW		k				x	
EPM	At	AW		w				u	
EPM	At	BP						u	
EPM	At	GS						x	
EPM	At	GS		k				x	
EPM	At	GS		q				x	
EPM	At	GS		w				x	
EPM	At	GS		z				x	
EPM	At	MN						x	
EPM	At	MN		k				x	
EPM	At	MN		q				x	
EPM	At	MN		w				x	
EPM	At	MN		z				x	
EPM	At	RO						u	if near rubble, talus and vegetated feeding areas
EPM	At	RO		k				x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
EPM	At	RO		q				x	
EPM	At	RO		w				u	if near rubble, talus and vegetated feeding areas
EPM	At	RO		z				u	if near rubble, talus and vegetated feeding areas
EPM	At	SL						x	
EPM	At	SL		k				x	
EPM	At	SL		q				x	
EPM	At	SL		w				x	
EPM	At	SL		z				x	
EPM	At	TA						u	if near vegetated feeding areas
EPM	At	TA		k				x	
EPM	At	TA		q				x	
EPM	At	TA		w				u	if near vegetated feeding areas
EPM	At	TA		z				u	if near vegetated feeding areas
EPM	ESSFdk	AC	77					x	
EPM	ESSFdk	AC	77	k				x	
EPM	ESSFdk	AC	77	q				x	
EPM	ESSFdk	AC	77	w				x	
EPM	ESSFdk	AC	77	z				x	
EPM	ESSFdk	AR	75					x	
EPM	ESSFdk	AR	75	k				x	
EPM	ESSFdk	AR	75	q				x	
EPM	ESSFdk	AR	75	w				x	
EPM	ESSFdk	AR	75	z				x	
EPM	ESSFdk	DM	02					x	
EPM	ESSFdk	DM	02	k				x	
EPM	ESSFdk	DM	02	q				x	
EPM	ESSFdk	DM	02	w				x	
EPM	ESSFdk	DM	02	z				x	
EPM	ESSFdk	FA	01					x	
EPM	ESSFdk	FA	01	k				x	
EPM	ESSFdk	FA	01	w				x	
EPM	ESSFdk	FG	03					x	
EPM	ESSFdk	FG	03	k				x	
EPM	ESSFdk	FG	03	q				x	
EPM	ESSFdk	FG	03	w				x	
EPM	ESSFdk	FG	03	z				x	
EPM	ESSFdk	FH	06					x	
EPM	ESSFdk	FH	06	k				x	
EPM	ESSFdk	FM	05					x	
EPM	ESSFdk	FS	04					x	
EPM	ESSFdk	FS	04	k				x	
EPM	ESSFdk	FS	04	q				x	
EPM	ESSFdk	FS	04	w				x	
EPM	ESSFdk	FS	04	z				x	
EPM	ESSFdk	RO	99					x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
EPM	ESSFdk	RO	99	k				x	
EPM	ESSFdk	RO	99	q				x	
EPM	ESSFdk	RO	99	w				x	
EPM	ESSFdk	RO	99	z				x	
EPM	ESSFdk	TA	44					x	
EPM	ESSFdk	TA	44	k				x	
EPM	ESSFdk	TA	44	q				x	
EPM	ESSFdk	TA	44	w				x	
EPM	ESSFdk	TA	44	z				x	
EPM	ESSFdk	WS	07					x	
EPM	ESSFdk	WS	07	k				x	
EPM	ESSFdk	WS	07	w				x	
EPM	ESSFdkp	AC	77					x	
EPM	ESSFdkp	AC	77	k				x	
EPM	ESSFdkp	AC	77	q				x	
EPM	ESSFdkp	AC	77	w				x	
EPM	ESSFdkp	AC	77	z				x	
EPM	ESSFdkp	AW	02					u	if cover (talus nearby)
EPM	ESSFdkp	AW	02	k				x	
EPM	ESSFdkp	AW	02	q				x	
EPM	ESSFdkp	AW	02	w				u	if cover (talus or krummoltz) nearby
EPM	ESSFdkp	AW	02	z				u	if cover (talus or krummoltz) nearby
EPM	ESSFdkp	EM	01					x	
EPM	ESSFdkp	EM	01	k				x	
EPM	ESSFdkp	EM	01	q				x	
EPM	ESSFdkp	EM	01	w				x	
EPM	ESSFdkp	EM	01	z				x	
EPM	ESSFdkp	GS	88					x	
EPM	ESSFdkp	GS	88	k				x	
EPM	ESSFdkp	GS	88	q				x	
EPM	ESSFdkp	GS	88	w				x	
EPM	ESSFdkp	GS	88	z				x	
EPM	ESSFdkp	LM	05					x	
EPM	ESSFdkp	LM	05	k				x	
EPM	ESSFdkp	LM	05	w				x	
EPM	ESSFdkp	MN						x	
EPM	ESSFdkp	MN		k				x	
EPM	ESSFdkp	MN		q				x	
EPM	ESSFdkp	MN		w				x	
EPM	ESSFdkp	MN		z				x	
EPM	ESSFdkp	RO	99					u	if near rubble, talus and vegetated feeding areas
EPM	ESSFdkp	RO	99	k				x	
EPM	ESSFdkp	RO	99	q				x	
EPM	ESSFdkp	RO	99	w				u	if near rubble, talus and vegetated feeding areas
EPM	ESSFdkp	RO	99	z				u	if near rubble, talus and vegetated feeding areas

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
EPM	ESSFdkp	TA	44					u	if near vegetated feeding areas
EPM	ESSFdkp	TA	44	k				x	
EPM	ESSFdkp	TA	44	q				x	
EPM	ESSFdkp	TA	44	w				u	if near vegetated feeding areas
EPM	ESSFdkp	TA	44	z				u	if near vegetated feeding areas
EPM	ESSFdkp	WF	03					u	
EPM	ESSFdkp	WF	03	k				x	
EPM	ESSFdkp	WF	03	q				u	
EPM	ESSFdkp	WF	03	w				u	
EPM	ESSFdkp	WF	03	z				u	
EPM	ESSFdkp	YW	04	w				u	
EPM	ESSFdkp	YW	04	z				u	
EPM	ESSFdku	AC	77					x	
EPM	ESSFdku	AC	77	k				x	
EPM	ESSFdku	AC	77	q				x	
EPM	ESSFdku	AC	77	w				x	
EPM	ESSFdku	AC	77	z				x	
EPM	ESSFdku	AR	75					x	
EPM	ESSFdku	AR	75	k				x	
EPM	ESSFdku	AR	75	q				x	
EPM	ESSFdku	AR	75	w				x	
EPM	ESSFdku	AR	75	z				x	
EPM	ESSFdku	FG	64					x	
EPM	ESSFdku	FG	64	k				x	
EPM	ESSFdku	FG	64	q				x	
EPM	ESSFdku	FG	64	w				x	
EPM	ESSFdku	FG	64	z				x	
EPM	ESSFdku	FH	68					x	
EPM	ESSFdku	FH	68	k				x	
EPM	ESSFdku	GS	88					x	
EPM	ESSFdku	GS	88	k				x	
EPM	ESSFdku	HG	67					x	
EPM	ESSFdku	HG	67	k				x	
EPM	ESSFdku	HG	67	q				x	
EPM	ESSFdku	HG	67	w				x	
EPM	ESSFdku	LG	61					x	
EPM	ESSFdku	LG	61	k				x	
EPM	ESSFdku	LG	61	q				x	
EPM	ESSFdku	LG	61	w				x	
EPM	ESSFdku	LH	65					x	
EPM	ESSFdku	LH	65	k				x	
EPM	ESSFdku	LH	65	w				x	
EPM	ESSFdku	LH	65	z				x	
EPM	ESSFdku	LM	63					x	
EPM	ESSFdku	LM	63	k				x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
EPM	ESSFdku	LM	63	q				x	
EPM	ESSFdku	LM	63	w				x	
EPM	ESSFdku	LM	63	z				x	
EPM	ESSFdku	MN						x	
EPM	ESSFdku	MN		k				x	
EPM	ESSFdku	MN		q				x	
EPM	ESSFdku	MN		w				x	
EPM	ESSFdku	MN		z				x	
EPM	ESSFdku	PJ	62					x	
EPM	ESSFdku	PJ	62	k				x	
EPM	ESSFdku	PJ	62	q				x	
EPM	ESSFdku	PJ	62	w				x	
EPM	ESSFdku	PJ	62	z				x	
EPM	ESSFdku	PW	66					x	
EPM	ESSFdku	PW	66	k				x	
EPM	ESSFdku	RO	99					x	
EPM	ESSFdku	RO	99	k				x	
EPM	ESSFdku	RO	99	q				x	
EPM	ESSFdku	RO	99	w				x	
EPM	ESSFdku	RO	99	z				x	
EPM	ESSFdku	TA	44					x	
EPM	ESSFdku	TA	44	k				x	
EPM	ESSFdku	TA	44	q				x	
EPM	ESSFdku	TA	44	w				x	
EPM	ESSFdku	TA	44	z				x	
EPM	ESSFdku	WS	69					x	
EPM	ESSFdku	WS	69	k				x	
EPM	ESSFdku	WS	69	w				x	
EPM	MSdk	AC	77					x	
EPM	MSdk	AC	77	k				x	
EPM	MSdk	AC	77	q				x	
EPM	MSdk	AC	77	w				x	
EPM	MSdk	AC	77	z				x	
EPM	MSdk	AR	75					x	
EPM	MSdk	AR	75	k				x	
EPM	MSdk	AR	75	q				x	
EPM	MSdk	AR	75	w				x	
EPM	MSdk	AR	75	z				x	
EPM	MSdk	LJ	03	k				x	
EPM	MSdk	LJ	03	w				x	
EPM	MSdk	LJ	03	z				x	
EPM	MSdk	LP	04					x	
EPM	MSdk	LP	04	k				x	
EPM	MSdk	LP	04	w				x	
EPM	MSdk	RO	99					x	

ECOSEC	BEC_GIS	SS_CODE1	SS_NUM1	MODA	MODB	STRCT_S	STRCT_M	M-TAMI-SE	Notes
EPM	MSdk	RO	99	k				x	
EPM	MSdk	RO	99	q				x	
EPM	MSdk	RO	99	w				x	
EPM	MSdk	RO	99	z				x	
EPM	MSdk	SB	07					x	
EPM	MSdk	SB	07	k				x	
EPM	MSdk	SB	07	w				x	
EPM	MSdk	SG	01					x	
EPM	MSdk	SG	01	k				x	
EPM	MSdk	SG	01	w				x	
EPM	MSdk	SH	06					x	
EPM	MSdk	SS	05					x	
EPM	MSdk	SS	05	k				x	
EPM	MSdk	SS	05	w				x	
EPM	MSdk	SW	02					x	
EPM	MSdk	SW	02	k				x	
EPM	MSdk	SW	02	q				x	
EPM	MSdk	SW	02	w				x	
EPM	MSdk	SW	02	z				x	
EPM	MSdk	TA	44					x	
EPM	MSdk	TA	44	k				x	
EPM	MSdk	TA	44	q				x	
EPM	MSdk	TA	44	w				x	
EPM	MSdk	TA	44	z				x	
EPM	MSdk	WS						x	
EPM	MSdk	WS		w				x	