

Grizzly Bear Habitat Complex Mapping

Kispiox Forest District

B.C. MINISTRY OF FOREST
Kispiox Forest District

B.C. MINISTRY OF WATER, LAND AND AIR PROTECTION
Skeena Region

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Appendix 1. List of PHM habitat types with seasonal habitat suitability ratings for grizzly bears within each biogeoclimatic zone in the Kispiox Forest District.

Appendix 2. Definition of field codes in the Grizzly Bear Habitat Complex database.

Appendix 3. Grizzly Bear Habitat Complex database table.

Background

In 1999 the Kispiox Forest District initiated District-wide habitat suitability mapping for several key wildlife species listed in the Kispiox LRMP (Land and Resource Management Plan). Work on the project was conducted by a ‘Kispiox Habitat Mapping Working Group’ consisting of personnel from the Ministry of Forests (Kispiox District and Regional offices), BC Environment, and consultants. A key component of the suitability mapping, especially for grizzly bears, was the development of a base ecosystem map on which to derive suitability ratings. Predictive Ecosystem Mapping (PEM) was identified as the only appropriate methodology for deriving a base ecosystem map given the large size of area to be covered, and cost and time constraints. At the time this project was initiated provincial PEM procedures and standards were being developed and several methodological problems being worked out by the region/province threatened to delay the project beyond the desired completion date. To ensure a more timely development of the base habitat layer the working group decided to deviate from the approach being refined by the Region/Province¹. This also provided an opportunity for MoF to experiment with alternative data input coverages and procedures. The mapping product derived was initially referred to as ‘PEM Research’ or ‘PEM Lite’ but is now called to as Predictive Habitat Mapping (PHM).

For each habitat type derived in the PHM spring, summer and fall grizzly bear habitat suitability ratings were developed. Simple assessment of these ratings on a map is difficult to interpret for management purposes, however. This is because some habitat types, notably ‘herb/shrub’ (which are mostly early seral cutblocks, and which are often common habitats in a watershed), are rated as high value types, but generally do not require special management considerations for bears. Also context issues, such as the size of habitat patches, association with other habitat types, and habitat effectiveness (human impacts) can greatly affect the probability of use by grizzly bears beyond the simple suitability ratings. The purpose of this project was to evaluate the Predictive Habitat Mapping, with respect to habitat type, suitability and context issues, and identify habitat concentrations that are of high value to grizzly bears and which may warrant special management considerations. These concentrations of high value habitats were delineated in polygons called Grizzly Bear Habitat Complexes (GBHCs).

Project Area

Grizzly Bear Habitat Complexes were delineated for all areas within the Kispiox and Cranberry TSAs with the exception of the Babine LRUP area, where “Treatment Unit” mapping already incorporates high value grizzly bear habitat complex mapping (Treatment Units (TUs 4, 4a and 5) (Ministry of Forests and Ministry of Environment, Lands and Parks. 1994, Mahon and Marsland 2001). For comparison between the two products, the types of habitats included in the GBHCs are similar to those in the Babine LRUP TUs 4 and 4a. No equivalent to Babine LRUP TU 5 zone (moderate grizzly

¹ The primary difference in approaches is summarized in the following section (Predictive Habitat Mapping Summary).

habitat) was delineated as part of this GBHC mapping project. District wide presentation of grizzly bear habitat areas should include both the GBHCs and the Babine LRUP TU mapping.

Base Inventory Information

Two primary sources of information were used in the Grizzly Bear Habitat Complex mapping: 1) Predictive Habitat Mapping and 2) salmon concentration areas. Details regarding this information are provided below.

Predictive Habitat Mapping Summary

This section provides a very brief overview of the procedures and model structure used for the Kispiox PHM. A detailed description of the PHM model and knowledge tables will be included in the final PHM report (Mahon et al. in prep).

PHM analysis was conducted by Don Morgan (Ministry of Forests, Prince Rupert Forest Region) based on ecological knowledge tables developed primarily by Don Reid (BC Environment) and Todd Mahon (WildFor Consultants Ltd.). The process used to build the PHM was generally consistent with the procedures outlined in *Standards for Predictive Ecosystem Mapping* (Resources Inventory Committee 1999a), although this project was considered “PEM research” and did not explicitly follow the standards. Two key differences from standard PEM are:

1. The Kispiox PHM used a soil moisture model as a key data layer, and did not use a slope position model.
2. Standard PEM derives ecosystem type and structural stage as unique attributes for each polygon. In the Kispiox PHM habitat units represent a combined ecosystem + structural stage.

A detailed report documenting the PHM procedures, knowledge tables, resultant habitat types, and grizzly bear suitability ratings is currently in preparation (Mahon et al, *in prep.*) A report outlining the first draft of the PHM is available (Edie 2001), however, there have been significant revisions to all aspects of the PHM since that report was produced.

PHM Scale and Polygon Structure

PHM mapping units were derived from Forest Cover and TRIM data at 1:20:000 scale. PHM polygons were derived by combining moisture, forest cover and slope polygon overlays. For the resultant polygons aspect was averaged to assign an aspect class to the polygon.

Ecological Knowledge Base

PHM map units were derived as combined ecosystem + structural stage units within each BEC zone (i.e. variants were lumped). Habitat units were classified for each BEC zone using a deterministic combination of conditions among 5 base data variables:

1. Moisture Index (dry, mesic, wet; TRIM Moisture Model),
2. Forest Cover Type (Inventory Type Group, NF_Desc, and NP_Desc from FC1),
3. Slope Class (0-3degrees, >3degrees; TRIM DEM),
4. Aspect Class (warm, cool; TRIM DEM), and
5. Stand Age. For forested habitat units structural stages were classified into 3 categories based on Forest Cover age class: Herb-Shrub (1-3), Young Forest (4-5), Mature forest (6-7) (bracketed values refer to Structural Stage codes from the *Field Manual for Describing Terrestrial Ecosystems* (BC MELP and BC MoF 1998)). Site series specific classifications were only made for the Mature forest stage. For forested sites in the Herb-Shrub and Young Forest stages, we did not feel we could confidently classify ecosystems to the site series level (because of poor correlation between sites and forest cover), and therefore restricted division of units within these stages to moisture (e.g. HS-wet, HS-mesic, HS-dry).

For non-forested sites, habitat units identified in Table 3.1 of the TEM Standards (RIC 1998) or units described in regional biophysical habitat mapping work, mostly from work by Lea and Kowall (1990) in the Babine area, were used. For areas identified as non-productive forest in the forest cover, a range of ecosystems occurred. Since most of these habitats offered similar suitability to grizzly bears (class 2-3) they were not differentiated and were simply designated them as 'non-productive forest' habitats, stratified by moisture within each BEC zone.

A list of resultant habitat units for each BEC zone is provided in Appendix 1. A sample of the PHM mapping for a small area is provided in Figure 1.

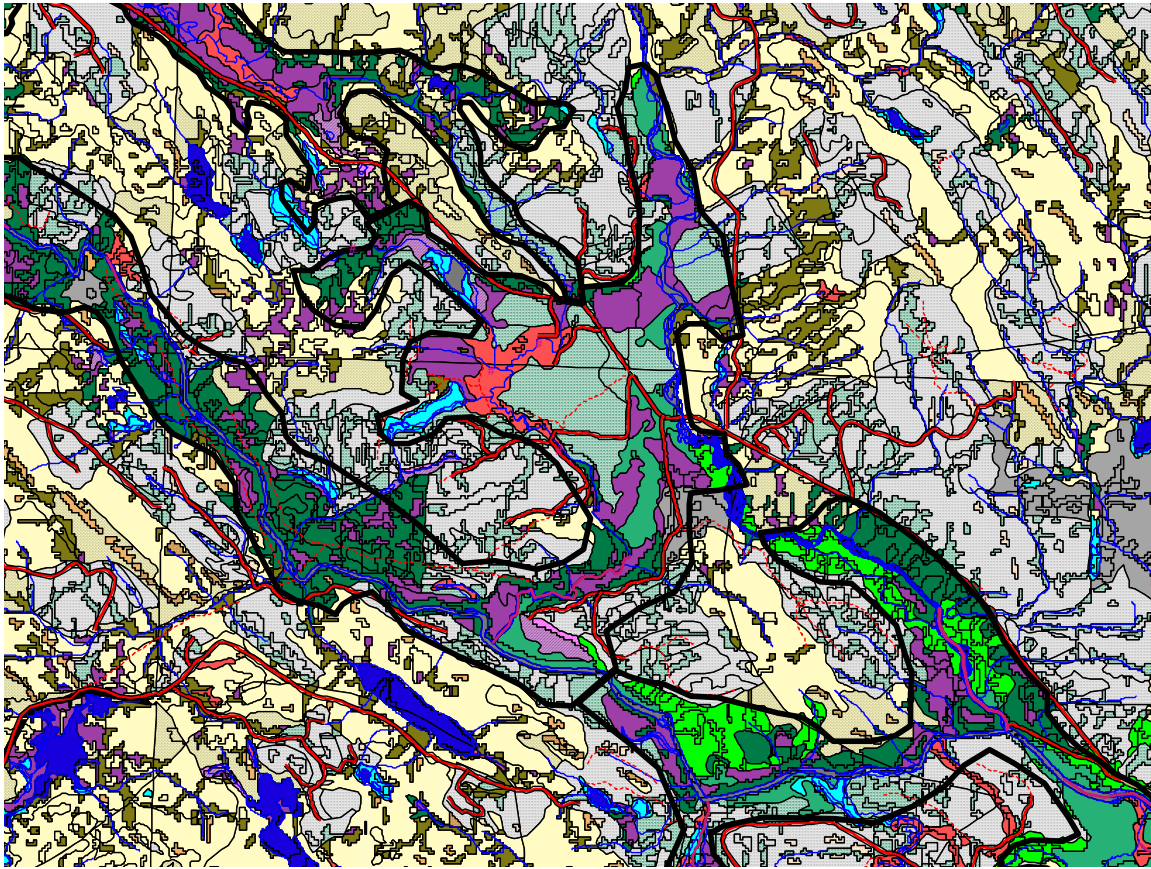


Figure 1. A sample of the PHM along the Kispiox River where it is joined by the Nangeese and Sweetin Rivers (scale ~1:50,000). Light yellow areas are mesic mature forest habitats (ICHmc2-01/03). Submesic habitats (ICHmc2-02/01b) are orange. Subhygric habitats are dark green and purple (05 (Sx-devil's club), and 07 (Hw-skunk cabbage), respectively). Lime green = deciduous seral; sage green = 06 (ActSx-Dogwood floodplain).

The thick black lines are Grizzly Bear Habitat Complex polygon boundaries.

Grizzly Bear Habitat Suitability Ratings

The suitability of PHM habitats to grizzly bears were rated using the provincially accepted 6-class rating scheme for each of three seasons, spring, summer and fall (RIC 1999b). Suitability is defined as the ability of a habitat in its current condition to provide the life requisites of a species (RIC 1999b), however, our focus was on the food life requisite only (Mahon *et al.* in prep.). Ratings were developed based on 4 sources of information:

1. The prominence of grizzly bear food plants within each habitat type from MoF ecosystem plot data.
2. The ecological condition of the habitat type, i.e., slope position and steepness, soil moisture and soil nutrient regimes
3. The site series or map unit ratings assigned to the same site series or similar map units by other researchers in the Kispiox Forest District (e.g., Simpson 1990, Lea

and Kowall 1992, Turney and Blume 2000) and ecologically similar areas (MacHutchon and Himmer 1997, MacHutchon 1999, 2000).

4. The suitability ratings assigned to map polygons during map verification fieldwork and grizzly bear telemetry ground investigations (MacHutchon and Mahon 2002).

A list of the suitability ratings for each habitat type is provided in Appendix 1.

Accuracy Assessment

A formal accuracy assessment of the Kispiox PHM has been conducted (Mahon 2002). The accuracy of the PHM was estimated using 2 scoring methods – ‘% dominant correct’ and ‘% overlap’, from *Protocol for quality assurance and accuracy assessment of ecosystem maps* (Meidenger 2000). For the current Kispiox PHM (version March 2002) the estimated accuracy of both the ‘% dominant correct’ and ‘% overlap’ methods was 75% (n=202). Two significant problems with the knowledge tables included misclassification between Young Forest and Deciduous and between Slide Avalanches and Subalpine Parkland habitat. Corrections for these and other minor issues were made prior to habitat complex mapping, and improved the accuracy of the PHM to ~80%. The most frequent classification errors remaining in the current model relate to the moisture layer. Overall the moisture model is tending to classify areas as being wetter than they really are. A relatively simple recalibration of the three moisture classes in the model should improve the overall PHM accuracy to ~85%. A final revision of the Kispiox PHM is being conducted by Don Morgan, however, changes in the final product are not anticipated to affect the habitat complex mapping that was conducted using the existing PHM (Mahon *et al.* in prep.).

Salmon Concentrations

In conjunction with the PHM initiative a separate project was undertaken to compile information on concentrations of salmon and known bear salmon feeding areas within the Kispiox Forest District (Roberts 2000). This information was derived largely from personal observations of fisheries and wildlife biologists, hunting and fishing guides, and naturalists with extensive experience in the Kispiox District. It also included a review of the Provincial Fish Inventory Stream Summary database. Specific information relating to concentration location, concentration length, concentration type, fish species, concentration period, and bear use period was summarized in a database for 96 potential concentration sites. Although the project was initially planned to be a District wide synopsis, detailed information from potential references was only acquired for the Kispiox and Babine watersheds. Information available from this work includes digital line and point map coverages showing the location of salmonid concentrations, a database detailing information for each of the 96 concentrations, and a brief report that summarizes the interview comments from local biologists, guides and naturalists.

Grizzly Bear Habitat Complex Mapping Procedures

Grizzly Bear Habitat Complexes (GBHCs) were delineated based on concentrations of high value grizzly bear habitat as identified through Predictive Habitat Mapping and salmon point source information. All polygons were delineated by T. Mahon and D. Fillier, with assistance from Maggie Marsland for approximately half of the District. The procedures and rationales we used to delineate polygons are detailed in the following sections. We attempted to delineation GBHCs in a comprehensive manner for all potential habitat complexes that met the criteria outlined below (as opposed to a representative approach where only a proportion of similar habitats complexes were delineated).

Grizzly Bear Habitat Complex Polygon Criteria

Three primary criteria were evaluated for defining GBHCs: 1) habitat types, 2) extent of habitat coverage, and 3) salmon information.

A list of the habitat types, with seasonal habitat suitability ratings, is provided in Appendix 1. Generally we considered all habitats with suitability ratings of 2 (moderately high) and better in any season for inclusion into a habitat complex. Two notable exceptions were made, however. For spring habitats, which appeared to be limited within the Kispiox, we also considered class 3 (moderate) habitats (notably deciduous dominated seral stands in the ICH and CWH). The second exception was for early seral herb/shrub habitats (mostly recent cutblocks), which do have class 2 suitability ratings during certain seasons. We did not consider them as candidate areas for GBHC designation because 1) their suitability is limited to a fairly short successional period, 2) they are subject to a variety of silvicultural activities that can greatly affect suitability, and 3) they are not likely to be considered for special management for grizzly bears.

GBHCs are usually comprised of more than one habitat type, but occasionally polygons were delineated around a large area consisting of a single habitat type (i.e. large alder-willow patch or wetland complexes). Typical habitats incorporated in complexes include:

- Avalanche tracks + associated forest
- Subalpine parkland meadows + associated forest
- Alder-Willow + Sx-Devil's club complexes
- Wetland complexes + associated forest
- Skunk cabbage habitats
- Floodplain ecosystems
- Devil's club habitats
- Early seral burns
- South aspect and valley bottom deciduous forests

A minimum GBHC polygon size was not identified prior to polygon delineation. Polygon sizes are primarily a result of the pattern of habitat distribution across the landscape. The smallest GBHCs ended up being ~100ha. **This does not indicate that smaller patches of habitats with high value suitability ratings are not actually of high value to bears or do not warrant special management consideration.** Generally,

however, larger habitat complexes, both complexes of one habitat type and complexes of multiple habitat types, are of greater value to grizzly bears and are therefore stronger management priorities than smaller isolated patches of high value habitats. The average GBHC size is 1750 ha, although this is strongly biased by large subalpine parkland and Avalanche track dominated polygons in the Alpine and subalpine parkland BEC zones.

Frequently GBHC polygons are adjacent to each other and the actual functional unit from a bear perspective may span several GBHCs polygons. We used ecological, and topographic features such as watershed boundaries, elevation, and aspect to delimit separate GBHCs, however, this was often a very subjective decision. This type of situation is most prevalent for subalpine parkland and Avalanche track dominated GBHCs in mountainous areas (especially the Skeena Mountains in the northwest portion of the District). Given the subjective nature of polygon delineation for adjacent areas, factors such as size should not be considered for management strategies/prioritization.

Potential Travel Corridors

Potential travel corridors were not considered as factors in delineating habitat complexes. In some situations it may be possible to predict potential travel corridors based on the distribution of habitat types and topography, however, those predictions required a level of subjective interpretation that we did feel was appropriate as part of this project. Delineation of habitat complexes was developed solely on aggregations of habitats and salmon concentration areas that offer high value forage to grizzly bears. Where potential travel corridors were noted within GBHCs they were documented in the associated database.

Mapping Scale and Grizzly Bear Habitat Complex Polygon Boundaries

GBHC polygons were delineated at approximately 1:100,000 scale. The estimated accuracy of polygon boundaries, with respect to underlying habitat boundaries and adjacent GBHC polygons is approximately 100m. Boundary refinements may be required for 1:20:000 scale operational planning. We used the following ecological rationales for boundary locations and recommend they be considered for boundary refinements at finer scales:

1. A buffer of ~100m of forested habitat was included around high value non-forested habitat types (alder-fern patches, riparian ecosystems, fens, wetlands, and avalanche slopes) to provide screening, thermal, and bedding requirements.
2. A buffer of ~100m of forested habitat was included beyond the embankments of stream gullies/terraces to provide windfirm mature forest travel corridors.

Line accuracy of ~100m also applies with respect to edge matching of adjacent polygons. Formal edge matching has not been conducted at this time and what should be shared polygon boundaries between adjacent polygons currently have separate boundaries for each polygon. This results in an artifact of having minor overlap or gaps between adjacent polygons.

Habitat Complex Ratings

Three ratings classes were ascribed to GBHCs. These ratings indicate relative habitat values within the Kispiox and do not correspond to any type of Provincial rating scheme. The vast majority of GBHCs are rated as Class 2, which represent the typical associations of high value grizzly bear habitat that occur in the Kispiox District, however, several areas stand out as offering exceptional value to grizzly bears (Class 1), as well as areas where potential for bears was in question or reduced by permanent human development (Class 3). A more detailed description of the criteria for each class is provided below.

Class 1 polygons are complexes of the very best grizzly bear habitat in the District. They are regionally significant in terms of exceptional habitat suitability, often include salmon feeding sites, and are known to be used extensively by grizzly bears. Impacts to these areas could have significant impacts to grizzly bears at the population level, through both their displacement from exceptional foraging areas and increased mortality. A list of the Class 1 GBHCs is provided in Table 1.

Class 2 GBHCs represent the typical complexes of high value grizzly bear habitats found in the Kispiox Forest District. These include all of the habitat associations identified in the preceding section (Grizzly Bear Habitat Complex Polygon Criteria). Class 2 polygons account for 75% of all GBHCs.

Class 3 areas were designated in two types of situations: 1) areas of class 2-3 habitat suitability where human development has permanently reduced the effectiveness of the area to grizzly bears. This occurs primarily for deciduous stands in valley bottoms that offer moderate to moderately high spring suitability, but which typically occur in association with towns and rural areas, and as a result actual use by grizzlies is low. Where Class 3 designations result from permanent effectiveness issues, special management considerations are generally not warranted. 2) Areas where the amount, extent or type of habitat was unclear from the PHM. In this second situation Class 3 GBHCs are strong candidates for field assessment to verify habitat associations and grizzly bear habitat suitability, especially at the stand scale relative to operational planning. Generally these areas were designated following a precautionary approach (i.e. to include them in a GBHC). This circumstance also often applied to valley bottom deciduous habitats (independent of the effectiveness issue), and in a limited number of cases where there appeared to be concentrations of Sx-devil's club habitat.

Table 1. Description of some of the highest value grizzly bear habitat complexes in the Kispiox forest District, where grizzly use is confirmed. Areas of equal or greater use may exist but are not documented. (Excludes Babine LRUP area).

| Grizzly Bear Habitat Complex Number | Location | Comments |
|--|---|---|
| 195 | Club Lake – Stephens Lake | High use fishing area along Club Creek; adjacent Hw-skunk cabbage and Sx-Devil’s club habitats. Within Swan Lake Provincial Park. |
| 97 | Upper Kispiox River – Stephens Creek confluence | Fishing along Stephens Creek; floodplain and Sx-Devil’s club habitats. Within Swan Lake Provincial Park. |
| 45 | Kispiox River – Footsore Lake to Nangeese R. confluence | Fishing along Nangeese; Hw-skunk cabbage and Sx-Devil’s club habitats. Partly within Swan Lake Provincial Park. |
| 44 | Nangeese River | High salmon availability along Nageese; Sx-Devil’s club and Hw-skunk cabbage habitats. |
| 46 | Kispiox River – Sweetin River to Clifford Creek | Some salmon scavenging; Sx-Devil’s club, floodplain and seral deciduous habitats. |
| 101 | Upper Wilson Creek | Extensive low elevation Avalanche track habitat |
| 165 | Suskwa River – Natlan Creek to Harold Price Creek | Seral south aspect deciduous slopes offer high value spring habitat; floodplain habitats; some salmon available. |
| 32 | Avalanche tracks between Deep Canoe Cr. and Kuldo Cr. | Low elevation southeast aspect avalanche tracks along Skeena River; frequent spring grizzly sightings |
| 20 | Lower Kuldo Creek valley | Extensive low elevation Avalanche track habitat. Probable movement corridor between Skeena and Upper Kispiox. |
| 23 | Mid-upper Kuldo Creek valley | Extensive low elevation Avalanche track habitat. Probable movement corridor between Skeena and Upper Kispiox. |

Overlay of Habitat Complexes with THLB and Landscape Units

GBHCs were delineated without consideration of administrative boundaries such as the Timber Harvesting Land Base (THLB) and Landscape Units (LUs). To assist with the development of formal management strategies, however, we have done a preliminary assessment of the overlap of the GBHCs with the THLB and with the draft Kispiox Landscape Units. The primary purpose of assessing overlap with the THLB is to gauge the overall level of potential impact of GBHCs to help drive management strategies. This assessment also identifies specific GBHCs where the overlap with the THLB is greatest. The purpose of assessing the distribution of GBHCs across LUs is to facilitate appropriate targeting of higher-level planning issues, such as access management plans and biodiversity emphasis options. It is recognized that both the THLB and LUs are currently being revised, and more detailed analysis with the updated THLB and LUs is recommend prior to implementation of management strategies.

Overlap of Grizzly Bear Habitat Complexes with the THLB

The THLB data used for this analysis was provided by Andrew Reviakin from the Kispiox Forest District and dated December 2001. For purposes of this analysis only THLB polygons with 'operable' codes were considered as potential THLB (A-Cranberry, B+M-conventional Kispiox, C-cable Kispiox). Polygons coded as 'N' or blank were not included in the analysis because these areas appeared to be primarily non-forested areas (NCBR, NPBR, NP forest types, and Swamps in the Forest Cover database). Based on this interpretation the total THLB in the Kispiox is 323,013ha (possible problem with missing THLB in Cranberry TSA). The total THLB outside of the Babine LRUP area (where GBHCs were mapped) is 251,733ha. **The total overlap of the GBHCs with the THLB (excluding LRUP area) is 12.3% (30,897ha).** The overlap of each individual GBHC with the THLB is identified in Appendix 3.

Distribution of Grizzly Bear Habitat Complexes within Draft Landscape Units.

A summary of the distribution of GBHCs within proposed Landscape Units, including overlap with the THLB, is provided in Table 2. At this stage all GBHC classes were included in the analysis. More detailed analysis stratified by Class (with strong emphasis on Class 1 areas and low emphasis on Class 3 areas) should be done before any management strategies are formalized, but this initial analysis does provide a preliminary indication of the distribution of GBHCs across the District. A variety of approaches may be used to evaluate this information with respect to strategic level planning for grizzly bears. One of the most important approaches may be to consider LUs with the highest overlap between GBHCs and the THLB as candidate areas for ‘get-in, get-out’ forest development strategies, similar to that employed in the Big Slide area. The idea behind this strategy is to have concentrated forest development in an area over a short period of time (generally until completion of silviculture requirements), and then remove road access to the area, with no additional forest development activities for a period of 20-50 years.

Table 2. Distribution of Grizzly Bear Habitat Complexes within proposed Landscape Units in the Kispiox Forest District.

| LU_ID | Landscape Unit | Size of LU (ha) | Percent of LU in GBHCs | Percent of LU in THLB | Percent of LU in THLB within GBHCs |
|----------------------|------------------|-----------------|------------------------|-----------------------|------------------------------------|
| 2 | Sicintine | 27761 | 15% | 29% | 11% |
| 3 | Sheladamus | 42081 | 47% | 36% | 25% |
| 4 | Atna | 53489 | 20% | 11% | 8% |
| 5 | Kuldo | 60135 | 71% | 6% | 38% |
| 6 | Upper_Kispiox | 63566 | 37% | 7% | 16% |
| 7 | Shedin | 61467 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 8 | Shelagyote | 57637 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 9 | Larkworthy | 35444 | 27% | 36% | 6% |
| 10 | Sweetin | 35853 | 50% | 30% | 19% |
| 11 | Deep_Canoe | 16331 | 67% | 12% | 7% |
| 12 | Hanawald | 23802 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 13 | Kispiox | 64669 | 27% | 67% | 13% |
| 14 | Babine_River | 56064 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 15 | Cranberry_River | 66376 | 26% | 5% ? error? | 8% |
| 16 | Tenas | 50351 | 21% | 41% | 10% |
| 17 | Nass_River_Kalum | 5937 | 6% | 0% | 0% |
| 18 | Gail | 25372 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 19 | McCully | 46632 | 40% | 37% | 11% |
| 20 | Upper_Cranberry | 33399 | 47% | 11% | 2% |
| 21 | Kiteen | 4534 | 12% | 0% | 0% |
| 22 | Babine | 13118 | N/A - Babine LRUP | N/A - Babine LRUP | N/A - Babine LRUP |
| 23 | Shegunia | 26428 | 20% | 34% | 1% |
| 24 | Moonlit | 32621 | 30% | 25% | 7% |
| 25 | Natlan | 23232 | 25% | 38% | 3% |
| 26 | Suskwa | 32004 | 37% | 32% | 14% |
| 27 | Kitwancool | 28160 | 43% | 10% | 4% |
| 28 | Skeena_Crossing | 60161 | 42% | 33% | 12% |
| 29 | Kitwanga | 32276 | 32% | 53% | 7% |
| 30 | Hazelton | 43253 | 48% | 24% | 28% |
| 32 | Skeena_West | 55799 | 40% | 1% | 42% |
| 33 | Juniper | 15206 | 39% | 9% | 6% |
| 34 | Seven_Sisters | 60876 | 34% | 10% | 16% |
| 35 | Kitsegucla | 46955 | 31% | 16% | 6% |
| Total excluding LRUP | | 1063531 | 30% | 24% | 12% |

Management Recommendations

The habitat complexes delineated in this project were not designed explicitly as special management zones. These complexes do, however, represent the most significant concentrations of high value grizzly bear habitat within the District, and would therefore be logical candidates for designation as special management zones.

Preliminary management recommendations provided here are those of the author, based on strategies and guidelines implemented in the Babine LRUP area (Ministry of Forests and Ministry of Environment, Lands and Parks 1994), recommendations from the *Identified Wildlife Management Strategy* (Ministry of Forests and Ministry of Environment, Lands and Parks 1999) and discussions with Darren Fillier and Len Vanderstar, Ministry of Water, Land and Air Protection, Smithers, BC. It is anticipated that designation of special management zones (WHAs?) and management guidelines will be negotiated among Ministry of Forests, Ministry of Water, Land and Air Protection, and forest Licensees (Jane Lloydsmith, pers. comm.).

The general approach proposed here is to have less formal management zone designation and more flexible management strategies than are outlined for grizzly bear WHAs in the IWMS, but to have comprehensive designation of special management areas and management strategies across the entire District.

GBHC Polygon Specific Recommendations

The recommendations provided below represent general strategies and are not intended to be applied strictly to each habitat complex. Where potential habitat complex specific management issues were observed during the mapping process, comments were noted in the attached database. Planners should refer to the database (Appendix 3) to determine if site specific recommendations were made for any given GBHC.

General Management Strategies

Operational Inventory Requirements

All proposed development within and adjacent to Grizzly Bear Habitat Complexes should be assessed by a qualified Biologist to 1) assess site-specific habitat values (feeding, bedding, screening, thermal) and features (trails and other signs of concentrated use) and 2) to evaluate, or assist in development of, operational plans with respect to applicable higher-level and operational planning guidelines for grizzly bears.

Management Objectives

The management objectives within GBHCs should be to:

- 1) Minimize impacts to suitability of high value habitats within GBHCs
- 2) Maintain or enhance long-term habitat effectiveness (no long-term displacement of bears or reduced habitat use).
- 3) Minimize potential for human-bear interactions.

Management Practices

To achieve the three primary objectives the following management practices are recommended.

Roads

- Minimize the total length of active roads within a GBHC.
- Minimize the total length of new road development within a GBHC.
- Avoid development of new mainline haul roads within a GBHC wherever possible.
- Locate roads to minimize the impact to high value habitats within a GBHC.
- Avoid road development within 150m from avalanche chutes, alder-fern seepage areas >2 ha, riparian floodplains, meadows, fens, wetlands, and deciduous south facing slopes wherever possible.

Harvesting

- Maintain forested buffers of approximately 100m adjacent to all high value non-forested habitats to provide bedding and screening habitat.
- Harvesting of high value forested habitats (e.g. Sx-Devil's club, Hw-Horsetail-Skunk cabbage) should be planned so that the total area of these habitats within structural stages 3-5 (~40-100 years) will not exceed 40% over the rotation of the stand.
- Harvest systems should generally attempt to minimize line of sight distances and maximize patch heterogeneity. Small clearcuts (<10ha), partial cutting, and variable retention are preferred harvest systems for meeting these objectives.
- Harvesting should follow a strategy of concentrated development followed by prompt silviculture and deactivation, to minimize the length of operation within a GBMC. This strategy is also recommended for application at a larger scale, including several GBHCs, where appropriate.

Timing of Operations

All harvesting and road building taking place within or adjacent to GBHCs should be conducted during periods of low or no use by bears whenever possible. Outside of winter, this will vary among GBHCs depending on the types of habitats they contain. A list of the expected primary and secondary seasons of use by grizzly bears within each GBHC is provided in Appendix 3.

Silviculture

For all high value forested habitats that are harvested, apply planting and juvenile spacing guidelines identified in “*Grizzly Bear Habitat in Managed Forests: Silviculture Treatments to Meet Habitat and Timber Objectives*” (BC Ministry of Forests 2001) or “*Using Silviculture to Maintain and Enhance Grizzly Bear Habitat in Six Variants of the Prince George Forest Region*” (Beaudry et al 2001).

Miscellaneous

- No camps (temporary or permanent) should be established within GBHCs.

High Value Habitats Outside of GBHCs

Small patches (<100ha) of high value habitats were generally not included in GBHCs. As indicated previously, this does not indicate that smaller patches are not actually of high value to bears and do not warrant special management consideration. While it is generally true that smaller and isolated patches of high value habitat receive lower use by grizzly bears than larger habitat areas and habitat complexes, actual use levels will vary site by site. Management strategies for high value habitat patches outside of GBHCs should be developed in conjunction with strategies for GBHCs. Possible considerations could include:

- Designation of select habitat types to apply special management guidelines to.
Potential habitats include:
 - Avalanche tracks extending down into ICH, CWH and SBS BEC zones
 - Hw-Skunk cabbage sites
 - Sx-Devil's club sites
 - Alder-Willow patches
- Salmon feeding areas not presently included within a GBHC
- Minimum patch sizes to apply special management guidelines to (e.g. Alder-fern patches >2ha)
- Whether to apply special management guidelines across the District or just in select Landscape Units with grizzly bear management emphasis

Contact Information

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To request a copy of a map of the Grizzly Bear Habitat Complexes and to get information on the formalization of management strategies for grizzly bears in the Kispiox Timber Supply Area contact:

Jane Lloydsmith, Ministry of Forests, Skeena Stikine Forest District, Bag 5000,
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Appendix 1. List of PHM habitat types with seasonal habitat suitability ratings for grizzly bears within each biogeoclimatic zone in the Kispiox Forest District. Chronological ratings refer to fixed time periods for each season across all BEC zones (mid April to late June, late June to late August, and late August to mid November). Phenological ratings use plant phenology to delimit seasons; therefore seasons have different dates for different BEC zones.

ICH mc1 and mc2

| PHM Habitat Symbol | | | Chronological Habitat Rating* | | | Phenological Habitat Rating* | | |
|--------------------|----------|---|-------------------------------|--------|------|------------------------------|--------|------|
| mc1 | mc2 | Habitat Description | Spring | Summer | Fall | Spring | Summer | Fall |
| 02/01b | 02/01b | HwPl-Kinnikinnick-Cladonia/ Hw-Step moss-submesic | 3 | 3 | 4 | 3 | 3 | 4 |
| 02/01b-w | 02/01b-w | HwPl-Kinnikinnick-Cladonia/ Hw-Step moss-submesic – <i>warm aspect</i> | 3 | 3 | 3 | 3 | 3 | 3 |
| 01/03 | 01/03 | Hw-Step moss/ Hw-Oak fern | 5 | 5 | 5 | 5 | 5 | 5 |
| 01/03-w | 01/03-w | Hw-Step moss/ Hw-Oak fern – <i>warm aspect</i> | 5 | 5 | 4 | 5 | 5 | 4 |
| 04 | 04 | Hw-Devil's club | 3 | 2 | 2 | 3 | 2 | 2 |
| - | 05 | Sx-Devil's club-Lady fern | 2 | 1 | 1 | 2 | 1 | 1 |
| 05 | 06 | ActSx-Dogwood | 2 | 1 | 1 | 2 | 1 | 1 |
| 06 | 07 | Hw-Skunk cabbage | 1 | 2 | 1 | 1 | 2 | 1 |
| - | 08 | SbSx-Scrub birch-Sedge | 2 | 3 | 3 | 2 | 3 | 3 |
| - | 52/53/54 | \$SxEp-Thimbleberry-Hazelnut/ \$AtEp-Dogwood \$SxEp-Devil's club | 3 | 3 | 3 | 3 | 3 | 3 |
| NP-d | NP-d | Non-productive forest type-dry | 3 | 3 | 3 | 3 | 3 | 3 |
| NP-m | NP-m | Non-productive forest type-mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| NP-w | NP-w | Non-productive forest type-wet | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-d | HS-d | Herb-Shrub – dry | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-m | HS-m | Herb-Shrub – mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-w | HS-w | Herb-Shrub – wet | 2 | 1 | 1 | 2 | 1 | 1 |
| BU-d | BU-d | Burn – dry | 4 | 4 | 4 | 4 | 4 | 4 |
| BU-m | BU-m | Burn – mesic | 2 | 3 | 3 | 2 | 3 | 3 |
| BU-w | BU-w | Burn – wet | 2 | 2 | 2 | 2 | 2 | 2 |
| AW | AW | Alder-Willow | 1 | 1 | 3 | 1 | 1 | 3 |
| SA-c | SA-c | Slide/Avalanche-cool aspect | 2 | 1 | 3 | 2 | 1 | 3 |
| SA-w | SA-w | Slide/Avalanche-warm aspect | 1 | 1 | 3 | 1 | 1 | 3 |
| WL | WL | Wetland | 2 | 3 | 4 | 2 | 3 | 4 |
| M | M | Meadow | 2 | 3 | 4 | 2 | 3 | 4 |
| YF-d | YF-d | Young Forest-dry | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-m | YF-m | Young Forest-mesic | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-w | YF-w | Young Forest-wet | 4 | 4 | 4 | 4 | 4 | 4 |
| RO | RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | UR | Human Settlementt | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | RD-d | Roads-dry | 3 | 3 | 5 | 3 | 3 | 5 |
| RD-m | RD-m | Roads-mesic | 2 | 2 | 4 | 2 | 2 | 4 |
| RD-w | RD-w | Roads-wet | 2 | 2 | 4 | 2 | 2 | 4 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

Appendix 1 cont. CWHws2

| PHM Habitat Symbol | | Chronological Habitat Rating* | | | Phenological Habitat Rating* | | |
|--------------------|--|-------------------------------|--------|------|------------------------------|--------|------|
| CWHws2 | Habitat Description | Spring | Summer | Fall | Spring | Summer | Fall |
| 02/03 | Pl-Kinnikinnick/ HwPl-Feathermoss | 4 | 5 | 4 | 4 | 5 | 4 |
| 01/04 | HwBa-Bramble/ BaCw-Oak fern | 5 | 4 | 4 | 5 | 4 | 4 |
| 05/06 | HwBa-Queen's cup/ BaCw-Devil's club | 2 | 1 | 1 | 2 | 1 | 1 |
| 07 | Ss-Salmonberry | 3 | 1 | 1 | 3 | 1 | 1 |
| 08/09 | Act-Red-osier dogwood/ Act-Willow | 3 | 1 | 2 | 3 | 1 | 2 |
| 10 | Pl-Sphagnum | 3 | 3 | 3 | 3 | 3 | 3 |
| 11 | CwSs-Skunk cabbage | 1 | 3 | 1 | 1 | 3 | 1 |
| DE | Deciduous | 3 | 3 | 3 | 3 | 3 | 3 |
| NP-d | Non-productive forest type-dry | 4 | 5 | 4 | 4 | 5 | 4 |
| NP-m | Non-productive forest type-mesic | 4 | 5 | 4 | 4 | 5 | 4 |
| NP-w | Non-productive forest type-wet | 2 | 3 | 2 | 2 | 3 | 2 |
| HS-d | Herb-Shrub – dry | 4 | 4 | 4 | 4 | 4 | 4 |
| HS-m | Herb-Shrub – mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-w | Herb-Shrub – wet | 3 | 3 | 3 | 3 | 3 | 3 |
| BU-d | Burn – dry | 4 | 4 | 4 | 4 | 4 | 4 |
| BU-m | Burn – mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| BU-w | Burn – wet | 3 | 3 | 3 | 3 | 3 | 3 |
| AW | Alder-Willow | 2 | 2 | 3 | 2 | 2 | 3 |
| SA-c | Slide/Avalanche-cool aspect | 2 | 1 | 3 | 2 | 1 | 3 |
| SA-w | Slide/Avalanche-warm aspect | 1 | 1 | 3 | 1 | 1 | 3 |
| WL/M | Wetland/Meadow | 3 | 4 | 4 | 3 | 4 | 4 |
| YF-d | Young Forest-dry | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-m | Young Forest-mesic | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-w | Young Forest-wet | 5 | 5 | 5 | 5 | 5 | 5 |
| RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | Human Settlementt | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | Roads-dry | 2 | 2 | 4 | 2 | 2 | 4 |
| RD-m | Roads-mesic | 2 | 2 | 4 | 2 | 2 | 4 |
| RD-w | Roads-wet | 2 | 2 | 4 | 2 | 2 | 4 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

Appendix 1 cont. SBSmc2

| PHM Habitat Symbol | | Chronological Habitat Rating* | | | Phenological Habitat Rating* | | |
|--------------------|--|-------------------------------|--------|------|------------------------------|--------|------|
| SBSmc2 | Habitat Name | Spring | Summer | Fall | Spring | Summer | Fall |
| 02/01c-w | Sxw-Huckleberry (submesic phase)/ Pl-Huckleberry-Cladonia - warm aspect | 4 | 3 | 3 | 4 | 3 | 3 |
| 02/01c | Sxw-Huckleberry (submesic phase)/ Pl-Huckleberry-Cladonia | 4 | 3 | 3 | 4 | 3 | 3 |
| 01/05/06-w | Sxw-Huckleberry/ Sxw-Twinberry-Coltsfoot/ Sxw-Oak fern – warm aspect | 4 | 3 | 3 | 4 | 3 | 3 |
| 01/05/06 | Sxw-Huckleberry/ Sxw-Twinberry-Coltsfoot/ Sxw-Oak fern | 4 | 4 | 4 | 4 | 4 | 4 |
| 03 | SbPl-Feathermoss | 5 | 4 | 4 | 5 | 4 | 4 |
| 09 | Sxw-Devil's club | 3 | 2 | 2 | 3 | 2 | 2 |
| 10 | Sxw-Horsetail | 1 | 2 | 4 | 1 | 2 | 4 |
| DE | Deciduous seral | 2 | 2 | 3 | 2 | 2 | 3 |
| 12/07 | Sxw-Scrub birch-Feathermoss/ SbSxw-Scrub birch-Sedge | 3 | 4 | 4 | 3 | 4 | 4 |
| NP-d | Non-productive forest type-dry | 4 | 3 | 3 | 4 | 3 | 3 |
| Np-m | Non-productive forest type-mesic | 4 | 3 | 3 | 4 | 3 | 3 |
| NP-w | Non-productive forest types-wet | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-d | Herb-Shrub – dry | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-m | Herb-Shrub – mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| HS-w | Herb-Shrub – wet | 2 | 1 | 1 | 2 | 1 | 1 |
| BU-d | Burn – dry | 3 | 4 | 4 | 3 | 4 | 4 |
| BU-m | Burn – mesic | 3 | 3 | 3 | 3 | 3 | 3 |
| BU-w | Burn – wet | 3 | 2 | 2 | 3 | 2 | 2 |
| AW | Alder-Willow | 1 | 1 | 3 | 1 | 1 | 3 |
| SA-c | Slide/Avalanche-cool aspect | 2 | 1 | 3 | 2 | 1 | 3 |
| SA-w | Slide/Avalanche-warm aspect | 1 | 1 | 3 | 1 | 1 | 3 |
| WL/M | Wetland/Meadow | 3 | 3 | 4 | 3 | 3 | 4 |
| YF-d | Young Forest-dry | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-m | Young Forest-mesic | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-w | Young-Forest-wet | 5 | 5 | 5 | 5 | 5 | 5 |
| RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | Human Settlement | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | Roads-dry | 3 | 3 | 5 | 3 | 3 | 5 |
| RD-m | Roads-m | 2 | 2 | 4 | 2 | 2 | 4 |
| RD-w | Roads-w | 2 | 2 | 4 | 2 | 2 | 4 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

Appendix 1 cont. ESSF wv and mc

| PHM Habitat Symbol | | | Chronological Habitat Ratings | | | Phenological Habitat Ratings | | |
|--------------------|------------|---|-------------------------------|--------|------|------------------------------|--------|------|
| ESSFmc | ESSFwv | Habitat Description | Spring | Summer | Fall | Spring | Summer | Fall |
| 01/04/05/06-w | 01/04/05-w | BI-Huckleberry-Leafy liverwort (mc)/ BIHm-Azalea (wv) – warm aspect | 5 | 4 | 3 | 5 | 4 | 3 |
| 01/04/05/06 | 01/04/05 | BI-Huckleberry-Leafy liverwort (mc)/ BIHm-Azalea (wv) | 5 | 5 | 4 | 5 | 5 | 4 |
| 02/03-w | 02/03-w | BIPI-Cladonia (mc+wv)/ BI-Huckleberry-Crowberry (mc) BIHm-Feathermoss – warm aspect | 5 | 3 | 2 | 3 | 3 | 2 |
| 02/03 | 02/03 | BIPI-Cladonia (mc+wv)/ BI-Huckleberry-Crowberry (mc) BIHm-Feathermoss | 5 | 4 | 3 | 4 | 4 | 3 |
| 07 | 06 | BI-Devil’s club-Lady fern | 5 | 1 | 1 | 3 | 1 | 1 |
| 09/10 | 08/09 | BI-Horsetail | 4 | 1 | 4 | 1 | 2 | 4 |
| DE | DE | Deciduous seral | 4 | 2 | 3 | 2 | 2 | 3 |
| NP-d | NP-d | Non-productive forest type-dry | 5 | 4 | 3 | 4 | 4 | 3 |
| NP-m | NP-m | Non-productive forest type-mesic | 5 | 4 | 3 | 4 | 4 | 3 |
| NP-w | NP-w | Non-productive forest type-wet | 5 | 4 | 3 | 4 | 4 | 3 |
| HS-d | HS-d | Herb-Shrub – dry | 5 | 3 | 3 | 3 | 3 | 3 |
| HS-m | HS-m | Herb-Shrub – mesic | 5 | 2 | 2 | 3 | 2 | 2 |
| HS-w | HS-w | Herb-Shrub – wet | 5 | 2 | 2 | 2 | 2 | 2 |
| BU-d | BU-d | Burn – dry | 5 | 3 | 3 | 3 | 3 | 3 |
| BU-m | BU-m | Burn – mesic | 5 | 2 | 2 | 3 | 2 | 2 |
| BU-w | BU-w | Burn – wet | 5 | 2 | 2 | 2 | 2 | 2 |
| AW | AW | Alder-Willow | 3 | 1 | 3 | 1 | 1 | 1 |
| SA-c | SA-c | Slide/Avalanche-cool aspect | 4 | 1 | 3 | 2 | 1 | 3 |
| SA-w | SA-w | Slide/Avalanche-warm aspect | 3 | 1 | 3 | 1 | 1 | 3 |
| WL/M | WL/M | Wetland/Meadow | 4 | 2 | 4 | 2 | 2 | 4 |
| PF/Kr-d | PF/Kr-d | Subalpine Krumholtz-dry** | 4 | 2 | 3 | 2 | 2 | 3 |
| PF/Kr-m | PF/Kr-m | Subalpine Krumholtz-mesic** | 4 | 2 | 3 | 2 | 2 | 3 |
| PF/Kr-w | PF/Kr-w | Subalpine Krumholtz-wet** | 4 | 2 | 3 | 2 | 2 | 3 |
| YF-d | YF-d | Young Forest-dry | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-m | YF-m | Young Forest-mesic | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-w | YF-w | Young Forest-wet | 5 | 4 | 5 | 4 | 5 | 5 |
| RO | RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | UR | Human Settlement | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | RD-d | Roads-dry | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-m | RD-m | Roads-mesic | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-w | RD-w | Roads-wet | 4 | 2 | 3 | 2 | 2 | 3 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

** includes 08 (mc) and 07 (wv) site series, higher elevation krumholtz and sub-alpine meadows.

Appendix 1 cont. MHmm2

| PHM Habitat Symbol | | Chronological Habitat Rating* | | | Phenological Habitat Rating* | | |
|--------------------|---|-------------------------------|--------|------|------------------------------|--------|------|
| MHmm2 | Habitat Name | Spring | Summer | Fall | Spring | Summer | Fall |
| 02 | HmBa-Mountain heather | 5 | 4 | 3 | 5 | 4 | 3 |
| 01/03/04/05 | HmBa-Blueberry/BaHm-Oak fern/ HmBa-Bramble/BaHm-Twistedstalk | 5 | 3 | 3 | 4 | 3 | 3 |
| 06/07/08/09 | HmYc-Deer-cabbage/YcHm-Hellebore/ HmYc-Sphagnum/YcHm-Skunk cabbage | 5 | 3 | 2 | 2 | 3 | 2 |
| DE | Deciduous | 4 | 2 | 3 | 2 | 2 | 3 |
| NP-d | Non-productive forest type-dry | 5 | 4 | 3 | 5 | 4 | 3 |
| NP-m | Non-productive forest type-mesic | 4 | 3 | 2 | 2 | 3 | 2 |
| NP-w | Non-productive forest type-wet | 4 | 3 | 2 | 2 | 3 | 2 |
| HS-d | Herb-Shrub – dry | 5 | 3 | 3 | 4 | 3 | 3 |
| HS-m | Herb-Shrub – mesic | 5 | 3 | 3 | 3 | 3 | 3 |
| HS-w | Herb-Shrub – wet | 4 | 3 | 2 | 2 | 3 | 2 |
| BU-d | Burn – dry | 5 | 3 | 3 | 4 | 3 | 3 |
| BU-m | Burn – mesic | 5 | 3 | 3 | 3 | 3 | 3 |
| BU-w | Burn – wet | 5 | 2 | 2 | 2 | 3 | 2 |
| AW | Alder-Willow | 4 | 2 | 3 | 2 | 2 | 3 |
| SA-c | Slide/Avalanche-cool aspect | 4 | 1 | 3 | 2 | 1 | 3 |
| SA-w | Slide/Avalanche-warm aspect | 3 | 1 | 3 | 1 | 1 | 3 |
| WL/M | Wetland/Meadow | 4 | 3 | 4 | 3 | 4 | 4 |
| PF/Kr-d | Subalpine Krumholtz-dry | 4 | 2 | 3 | 2 | 2 | 3 |
| PF/Kr-m | Subalpine Krumholtz-mesic | 4 | 2 | 3 | 2 | 2 | 3 |
| PF/Kr-w | Subalpine Krumholtz-wet | 4 | 2 | 3 | 2 | 2 | 3 |
| YF-d | Young Forest-dry | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-m | Young Forest-mesic | 5 | 5 | 5 | 5 | 5 | 5 |
| YF-w | Young-Forest-wet | 5 | 5 | 5 | 5 | 5 | 5 |
| RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | Human Settlement | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | Roads-dry | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-m | Roads-m | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-w | Roads-w | 4 | 2 | 3 | 2 | 2 | 3 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

Appendix 1 cont. Alpine

| PHM Habitat Symbol | | Chronological Habitat Rating* | | | Phenological Habitat Rating* | | |
|--------------------|---------------------------------|-------------------------------|--------|------|------------------------------|--------|------|
| AT | Habitat Description | Spring | Summer | Fall | Spring | Summer | Fall |
| PF/K-d | Parkland Forest-Krummholz-dry | 5 | 3 | 4 | 3 | 3 | 4 |
| PF/K-m | Parkland Forest-Krummholz-mesic | 5 | 3 | 4 | 3 | 3 | 4 |
| PF/K-w | Parkland Forest-Krummholz-wet | 5 | 2 | 4 | 2 | 2 | 4 |
| DL | Dry Lichen | 5 | 5 | 5 | 5 | 5 | 5 |
| HG | Heath-Grass | 5 | 3 | 3 | 3 | 4 | 3 |
| HM | Herbaceous Meadow | 5 | 3 | 4 | 3 | 4 | 5 |
| AW | Alder-Willow | 5 | 2 | 3 | 2 | 2 | 3 |
| WL/M | Wetland/Meadow | 5 | 3 | 5 | 3 | 4 | 5 |
| RO | Rock | 6 | 6 | 6 | 6 | 6 | 6 |
| WA | Water | 6 | 6 | 6 | 6 | 6 | 6 |
| UR | Human Settlement | 6 | 6 | 6 | 6 | 6 | 6 |
| RD-d | Road-dry | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-m | Road-mesic | 4 | 2 | 3 | 2 | 2 | 3 |
| RD-w | Road-wet | 4 | 2 | 3 | 2 | 2 | 3 |

* 1=High, 2=Moderately High, 3=Moderate, 4=Low, 5=Very Low, 6=Nil

Appendix 2. Definition of field codes in the Grizzly Bear Habitat Complex database.

| Field Code | Description |
|-------------------|--|
| GBHC | Unique Grizzly Bear Habitat Complex polygon identifier |
| Rating | Relative value rating of GBHC. 1=exceptional value, 2=typical high value complexes found in the Kispiox, 3=areas compromised by permanent human development or areas where extent or value of underlying habitat is uncertain. |
| Habitat1-5 | Prominence of high value habitat types within GBHC. For descriptions of habitat abbreviations and suitability ratings refer to Appendix 1. |
| Season1,2 | Primary and secondary season of use |
| Elev1,2 | Broad elevation bands included within GBHC |
| Salmon | Indicates whether salmon feeding sites occur within GBHC |
| Bdy_Ratl | Comments relating to GBHC polygon boundary location |
| Comments | General comments |
| MgmtRcmd | Management recommendations specific to GBHC |
| RdAccess | Indicates whether there are currently roads developed within a GBHC |
| BEC_SubZ | Dominant biogeoclimatic subzone and variant within a GBHC |
| Area | Size of GBHC (ha) |
| THLBha | Overlap of GBHC with the THLB (ha) |
| THLBpc | Percent of GBHC within the THLB |
| LU_Name | Name of draft Landscape Unit GBHC is predominantly within |

Appendix 2. Grizzly bear Habitat Complex database.

| GBHC | Rating | Habitat1 | Habitat2 | Habitat3 | Habitat4 | Habitat5 | Season1 | Season2 | Elev1 | Elev2 | Salmon | Bdy_Ratl | Comments | MgmtRcmd | RdAccess | BEC_SubZ | Area | THLBha | THLbpc | LU_NAME |
|------|--------|-----------------------------|-------------------------|-----------------------------|-------------------------|----------|---------|---------|--------|--------|--------|---|--|---|----------|----------|------|--------|--------|------------|
| 1 | 2 | WL/M | AW | 08 09(wv) / 09 10 (mc) ESSF | | | SU | FA | Mid | | No | | Shelagyote/Sicintine headwater wetlands. Extension of Babine LRUP TU 2 zone. | No road access into unit. | No | ESSFwv | 1972 | 77 | 3.89% | Atna |
| 2 | 2 | SA | WL/M | PK/Kr | | | SU | | High | | No | | | | No | ESSFwv | 616 | 17 | 2.81% | Atna |
| 3 | 2 | 08 09(wv) / 09 10 (mc) ESSF | 06 (wv) / 07 (mc) ESSF | DE | AW | WL/M | SU | FA | Valley | Mid | ? | + 150 metres around the horsetail site. | | | No | ESSFwv | 585 | 209 | 35.66% | Atna |
| 4 | 2 | SA | PF/Kr | 06 (wv) / 07 (mc) ESSF | AW | | SU | | High | Mid | No | | | | No | ESSFwv | 1407 | 21 | 1.49% | Atna |
| 5 | 2 | SA | 05 (mc2) ICH | AW | 06 (mc1) / 07 (mc2) ICH | | SU | SP | Valley | Mid | ? | | Lower avalanche chutes have potential to move overall rating to class 1. Ground verification is recommended because (1) likely travel corridor along river, and (2) potential fishing sites. | Greater than 50% of the zone is zonal habitat which can be developed. Use a get-in get-out strategy for the zonal ecosystems between avalanche tracks within this zone. | No | ICH mc 1 | 805 | 274 | 33.98% | Sicintine |
| 6 | 3 | AW | 05 (mc2) ICH | | | | SU | | Mid | | No | | Actual extent of 05 is suspect. Ground verification is recommended because unsure extent of Sx Devil's Club sites. If pockets of high value exist, may be able to address through mitigative measures. | | No | ICH mc 1 | 539 | 393 | 73.01% | Sicintine |
| 7 | 2 | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | | | | SU | FA | Valley | | ? | | Probable travel corridor. | | No | ICH mc 1 | 177 | 66 | 37.52% | Sicintine |
| 8 | 2 | AW | SA | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | | SU | SP | Valley | | ? | Mid and upper avalanche tracks not included due to narrow size and lack of adjacent high value units. | Probable travel corridor. | Zonal area between AW and River suitable for development. | No | ICH mc 1 | 373 | 94 | 25.18% | Sicintine |
| 9 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | AW | DE | | SU | FA | Valley | | ? | Floodplain, benches, bdary at lease 100 m off of Skeena break. | Field Assessment for travel corridor and fishing sites and fishery & ungulate values. | Potential high value, maintain 100m + buffer off of Skeena break. | Proposed | ICH mc 1 | 1394 | 697 | 50.02% | Sheladamas |
| 10 | 2 | PF/Kr | | | | | SU | | High | | No | | | | No | ESSFwvp | 1360 | 0 | 0.00% | Sheladamas |
| 11 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) | WL | | | SU | FA | Mid | | No | Used road on nw side. | Adjacent/Extension to LRUP TU4 around Damsumlo Lake. | | Yes | ICH mc 1 | 244 | 5 | 2.14% | Sheladamas |
| 12 | 2 | AW | SA | 05 (mc2) ICH | DE | WL | SU | | Mid | Valley | No | | | | No | ICH mc 1 | 595 | 203 | 34.09% | Sheladamas |
| 13 | 2 | AW | 05 (mc2) ICH | | | | SU | | Mid | Valley | No | | | Use a get-in get-out strategy for the zonal ecosystems within this zone. | | ICH mc 1 | 1850 | 517 | 27.94% | Sheladamas |
| 14 | 2 | AW | DE | 05 (mc2) ICH | | | SU | | Mid | Valley | No | | | | No | ICH mc 1 | 441 | 61 | 13.86% | Sheladamas |
| 15 | 2 | AW | 05 (mc2) ICH | | | | SU | | Mid | | ? | | Extensive AW | | No | ESSFwv | 576 | 88 | 17.03% | Sheladamas |
| 16 | 2 | SA | PF/Kr | AW | 05 (mc2) ICH | | SU | | Mid | High | No | | | | No | ESSFwv | 2736 | 42 | 1.53% | Sheladamas |
| 17 | 3 | 05 (mc2) ICH | AW | | | | SU | | Low | Mid | No | | Extent and value of Sx-devil's club unsure. Candidate for field assessment. Possible Class 2. | | No | ICH mc 1 | 438 | 184 | 41.92% | Sheladamas |
| 18 | 3 | AW | 05 (mc2) ICH | WL | | | SU | | Mid | | No | | Extent and value of Sx-devil's club unsure. Candidate for field assessment. Possible Class 2. | | No | ICH mc 1 | 1070 | 692 | 64.66% | Sheladamas |
| 19 | 2 | SA | 05 (mc2) ICH | PF/Kr | AW | | SU | | High | Mid | No | | | | No | ESSFwv | 2790 | 137 | 4.91% | Sheladamas |
| 20 | 1 | AW | 05 (mc2) ICH | SA | DE | NP | SU | | High | | No | | Probably major movement corridor along Kuldo Creek. | | No | ICH mc 1 | 5177 | 685 | 13.23% | Kuldo |
| 21 | 2 | SA | AW | PF/Kr | NP | | SU | | High | | No | | | | No | ESSFwv | 6411 | 0 | 0.00% | Kuldo |
| 22 | 2 | SA | PF/Kr | | | | SU | | High | | No | | | | No | ESSFwv | 3430 | 0 | 0.00% | Kuldo |
| 23 | 1 | SA | AW | 05 (mc2) ICH | | | SU | | High | | No | | Probably major movement corridor along Kuldo Creek. | | No | ICH mc 1 | 3022 | 360 | 11.90% | Kuldo |
| 24 | 2 | SA | AW | 05 (mc2) ICH | WL | | SU | | High | | No | | | | No | ESSFwv | 7360 | 267 | 3.62% | Kuldo |
| 25 | 2 | SA | PF/Kr | | | | SU | | High | | No | Small side drainage to Kuldo Creek. | | | No | ESSFwv | 3395 | 0 | 0.00% | Kuldo |
| 26 | 2 | SA | PF/Kr | | | | SU | | High | | No | Small side drainage to Kuldo Creek. | | | No | ESSFwv | 1587 | 0 | 0.00% | Kuldo |

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|----|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------|----|----|------|------|----------|---|--|--|-------------|----------|------|------|--------|---------------|
| 27 | 2 | SA | PF/Kr | 05 (mc2) ICH | | | SU | | High | | No | | Potential travel corridor along upper Sweetin to Upper Kuldo. | If development in upper Sweetin, road access should be on east side. | No | ESSFwv | 5156 | 197 | 3.82% | Sweetin |
| 28 | 3 | WL | | | | | SU | | Mid | High | No | Encompasses wetland complex | Turney rates area as class 4 or poorer. Close proximity to known fishing sites, potential for behavioral spacing. | | No | ESSFwv | 862 | 0 | 0.00% | Sweetin |
| 29 | 3 | WL | 06 (wv) / 07 (mc) ESSF | AW | | | SU | | Mid | High | No | | Turney rates area as class 3 or poorer. | | No | ESSFwv | 628 | 109 | 17.40% | Sweetin |
| 30 | 2 | SA | NP | PF/Kr | | | SU | | High | | No | | Potential travel corridor along upper Sweetin to Lower Kuldo. | | No | ESSFwv | 4180 | 4 | 0.11% | Kuldo |
| 31 | 2 | SA | PF/Kr | AW | 05 (mc2) ICH | | SU | SP | High | | No | | Has potential to be downgraded to a 3. | | No | ESSFwv | 3998 | 59 | 1.48% | Sweetin |
| 32 | 1 | SA | 05 (mc2) ICH | AW | PF/Kr | | SP | SU | Mid | High | No | | | | No | ESSFwv | 3057 | 39 | 1.28% | Deep_Canoe |
| 33 | 2 | SA | AW | PF/Kr | | | SU | | High | | No | | Has potential to be downgraded to 3 because they is abundant AV and AW represented nearby. | | No | ESSFwv | 2164 | 0 | 0.00% | Deep_Canoe |
| 34 | 2 | AW | NP | SA | 05 (mc2) ICH | | SU | SP | Mid | High | No | | Mid Deep Canoe creek and tributaries. | | Yes | ESSFwv | 3213 | 226 | 7.04% | Deep_Canoe |
| 35 | 2 | 06 (mc1) / 07 (mc2) ICH | 05(mc1) / 06 (mc2) ICH | Meadow | 52/53/54 ICH | 05 (mc2) ICH & AW | SP | SU | low | | Yes | borders road on NW side | Skeena Floodplain Could be upgraded to a 1 | | Yes | ICH mc 1 | 656 | 222 | 33.89% | Larkworthy |
| 36 | 3 | SA | PF/Kr | | | | SU | | High | | No | East bdary 100m across creek | Possible travel corridor with connection Sam Green drainage | | No | ESSFwv | 898 | 0 | 0.00% | Larkworthy |
| 37 | 2 | SA | 05 (mc2) ICH | | | | SU | Sp | mid | High | No | | Connectivity through Java Ck pass | | N0/proposed | ESSFwvp | 1619 | 100 | 6.20% | Larkworthy |
| 38 | 2 | SA | PF/Kr | 05 (mc2) ICH | | | SU | SP | High | | No | | | | no | ESSFwv | 753 | 0 | 0.00% | Larkworthy |
| 39 | 2 | 52/53/54 ICH | SA | | | | SP | SU | mid | low | No | follow decid. Type | possible down grade to 3 | | Yes | ICH mc 1 | 112 | 1 | 0.96% | Larkworthy |
| 40 | 2 | 52/53/54 ICH | AW | | | | SP | SU | low | mid | No/Maybe | follow decid. Type | possible down grade to 3 | | no | ICH mc 1 | 216 | 5 | 2.38% | Larkworthy |
| 41 | 2 | SA | PF/Kr | | | | SU | Sp | High | mid | No/Maybe | follow av. Tracks and high value habitats | | maintain 100 m forested buffers on av. tracks | no | ESSFwv | 2738 | 0 | 0.00% | Larkworthy |
| 42 | 2 | 06 (mc1) / 07 (mc2) ICH | AW | 05 (mc2) ICH | | | SU | FA | Low | Mid | Yes | | Uknown if salmon spawning sites | | Yes | ICH mc 1 | 591 | 327 | 55.34% | Kispiox |
| 43 | 2 | AW | 05 (mc2) ICH | | | | SU | | mid | high | no | | | | yes | ESSFwv | 1283 | 419 | 32.67% | Kispiox |
| 44 | 1 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | AW | | | SU | FA | low | | Yes | Boundary located to provide buffer around bear fishing sites. | High salmon availability, late summer fall salmon & skunk cabbage forage | | Yes | ICH mc 1 | 760 | 627 | 82.45% | Sweetin |
| 45 | 1 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | 05(mc1) / 06 (mc2) ICH | AW | HS-w | FA | SP | Low | | Yes | Boundary located to provide buffer around bear fishing sites. | Very high Salmon availability and skunk cabbage. | | Yes | ICH mc 1 | 2002 | 1176 | 58.73% | Upper_Kispiox |
| 46 | 1 | 05 (mc2) ICH | 05(mc1) / 06 (mc2) ICH | DE | 06 (mc1) / 07 (mc2) ICH | AW | FA | SP | Low | | Yes | | Very high Salmon availability and skunk cabbage. High value floodplain and deciduous for feeding. | | Yes | ICH mc 2 | 1552 | 639 | 41.16% | Kispiox |
| 48 | 2 | DE | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | | | SP | FA | Low | | Yes | Boundary located to provide buffer around bear fishing sites. | Road access and northern range of human habitation could have effectiveness issues. | | Yes | ICH mc 2 | 898 | 222 | 24.74% | Kispiox |
| 49 | 2 | 05 (mc2) ICH | AW | 06 (mc1) / 07 (mc2) ICH | WL | | SP | FA | Low | | Yes | Boundary located to provide buffer around bear fishing sites. | Area to be considered for field review. | | Yes | ICH mc 2 | 430 | 288 | 67.11% | Kispiox |
| 50 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | WL | NP | | FA | SP | Low | | No | | Carrigan creek, probably travel movement corridor | | Yes | ICH mc 1 | 333 | 259 | 77.79% | Tenas |
| 51 | 3 | HS-m | BU | | | | SP | FA | Low | | Yes | | Ken Fire. Forbs and berries available, however, stand starting to reach stem exclusion, therefore downgraded to Class 3. | | Yes | ICHmc2 | 2209 | 1371 | 62.08% | Tenas |
| 52 | 1 | 05 (mc2) ICH | 05(mc1) / 06 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | | | FA | SP | Low | | Yes | | High observed use. Confluence of Skeena and Babine. High travel area. Possibly a two based on small size of area. | | Yes | ICHmc2 | 76 | 26 | 34.85% | Tenas |
| 53 | 1 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | AW | | | FA | SP | Low | | Yes | | Actually floodplain (05-06). High observed use. Confluence of Skeena and Babine. High travel area. Possibly a two based on small size of area. | | Yes | ICHmc2 | 27 | 6 | 21.03% | Tenas |
| 54 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | Krumholz area with high observed grizzly bear use. Marmot feeding common. Feeding and denning to NW. | | No | ESSFwv | 581 | 0 | 0.00% | Tenas |

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|-----|---|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|----|------|-----|----------|---|--|--|-----|----------------|------|-----|--------|-----------------|
| 80 | 2 | NP | DE | | | | SP | FA | Low | | Yes | | Habitat effectiveness and mortality issues due to proximity to roads. | | Yes | ICHmc2 | 480 | 58 | 12.12% | McCully |
| 81 | 2 | DE | NP | 08 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | SP | | Low | | No | | Habitat effectiveness and mortality issues due to proximity to roads. | | Yes | ICHmc2 | 475 | 91 | 19.25% | McCully |
| 82 | 2 | 05(mc1) / 06 (mc2) ICH | DE | AW | | | FA | SP | Low | | Yes | | Habitat effectiveness and mortality issues due to proximity to roads. | | | ICH mc 2 | 471 | 54 | 11.56% | McCully |
| 83 | 2 | PF/Kr | SA | AW | | | SU | | High | | No | | Along Kispiox Mountain (Moonlit) Trail. | | No | ESSFwv / AT | 1662 | 21 | 1.29% | McCully |
| 84 | 3 | PF/Kr | SA | | | | SU | | High | | No | | Downgraded due to small size of unit. Headwaters of Moonlit Creek. | | No | ESSFwv / AT | 690 | 0 | 0.00% | Moonlit |
| 85 | 2 | PF/Kr | SA | NP | | | SU | | High | | No | | Could be downgraded to a 3 based on extent and value of SA. | | No | ESSFwv / AT | 2022 | 40 | 1.97% | McCully |
| 86 | 2 | PF/Kr | NP | SA | | | SU | | High | | No | | Possible movement corridor from Burdick Creek to Date Creek. Possible downgrade to 3 due based extent of value PF/Kr, SA and NP. | | No | ESSFwv / AT | 3031 | 4 | 0.12% | Skeena_Crossing |
| 87 | 2 | PF/Kr | SA | NP | | | SU | | High | | No | | | | No | ESSFwv / AT | 3427 | 0 | 0.00% | Moonlit |
| 88 | 3 | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | WL | AW | | FA | SP | Low | | Unknow n | | Similar representantative habitats have already been zoned in the vicinity, therefore it is only rated as a 3. And the unit is of relatively small size. | | Yes | ICHmc2 | 103 | 80 | 77.42% | McCully |
| 89 | 3 | 05 (mc2) ICH | | | | | FA | | Mid | | No | | Rated as moderate due to dispersed nature of 05 (mc2) ICH. | | No | ICHmc2 | 287 | 56 | 19.53% | McCully |
| 90 | 3 | PF/Kr | WL | | 06 (wv) / 07 (mc) ESSF | | SU | FA | High | | No | | Probably movement corridor between units 89, 90 and 91. Bears and goats move from Tsugwinselda to McCully creeks, through these units. | | No | ESSFwv | 926 | 0 | 0.00% | McCully |
| 91 | 2 | PF/Kr | | | | | SU | | High | | No | | Probably movement corridor between units 89, 90 and 91. Bears and goats move from Tsugwinselda to McCully creeks, through these units. | | No | ESSFwv | 773 | 0 | 0.00% | McCully |
| 92 | 3 | PF/Kr | | | | | SU | | High | | No | | Based on experience, it seems that PF/Kr is not as high as rated. Similar repretation of habitats have already been zoned in vicinity. | | No | ESSFwv | 1482 | 0 | 0.00% | Moonlit |
| 93 | 3 | 06 (wv) / 07 (mc) ESSF | WL | | | | FA | SU | High | | No | | Downgraded to due dispersed nature of devil's club. | | No | ESSFwv | 789 | 375 | 47.47% | McCully |
| 94 | 2 | AW | | | | | SU | | mid | | no | | Road reduces effectiveness | | Yes | ICHmc2 | 126 | 66 | 52.47% | Kispiox |
| 95 | 2 | DE | NP | | | | SU | SP | mid | | no | | Possible downgrade - typing? | | No | ESSFwv | 171 | 0 | 0.00% | Cranberry_River |
| 96 | 2 | AW | NP | | | | SU | FA | Mid | | No | | | | No | ICHmc1/ES SFwv | 178 | 74 | 41.74% | Upper_Kispiox |
| 97 | 1 | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | AW | | 05(mc1) / 06 (mc2) ICH | FA | SP | Mid | | Yes | Borders and within Protected Area | Included Protected Area Re: Ecological Integrity; Major Salmon feeding area along Stephen's Ck. | | No | ICHmc1 | 811 | 15 | 1.84% | Upper_Kispiox |
| 98 | 2 | PF/Kr | SA | | | | SU | | High | | No | | | | No | ESSFwv | 1344 | 15 | 1.09% | Upper_Cranberry |
| 99 | 2 | SA | PF/Kr | HS | | | SU | FA | High | | No | | | | No | ESSFwv | 3883 | 16 | 0.42% | Upper_Cranberry |
| 100 | 2 | SA | PF/Kr | NP | | | SU | FA | High | | No | | | | No | ESSFwv | 2272 | 1 | 0.06% | Upper_Cranberry |
| 101 | 1 | SA | PF/Kr | AW | | 05/06CwH | SU | FA | high | Mid | Unknow n | | | | No | ESSFwv/C WHws2 | 3348 | 0 | 0.00% | Upper_Cranberry |
| 102 | 2 | 07 CWH | 05(mc1) / 06 (mc2) ICH | 05/06CwH | | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | FA | | Mid | Yes | | | | Yes | CwHws2/I CHmc2 | 380 | 56 | 14.64% | Upper_Cranberry |
| 103 | 2 | 05(mc1) / 06 (mc2) ICH | 52/53/54 ICH | NP | HS | | 05 (mc2) ICH | FA | SP | low | Yes | Salmon access regardless of Kitwanga or Cranberry or Hgby. 37 effectiveness limitations | Effectiveness reduced due to access - otherwise a 1 rating; valley bottom movement corridor; LGL Suit. work | | Yes | ICHmc2 | 2031 | 203 | 9.98% | Cranberry_River |
| 104 | 2 | 52/53/54 ICH | 05(mc1) / 06 (mc2) ICH | AW | WL | | 06 (mc1) / 07 (mc2) ICH | FA | SP | low | Yes | Salmon access;floodplain;adjacent decid. Habitat | Effectiveness reduced due to access - otherwise a 1 rating; valley bottom movement corridor;LGL Suit. work | | Yes | ICHmc2 | 3772 | 0 | 0.00% | Cranberry_River |
| 105 | 2 | 05(mc1) / 06 (mc2) ICH | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | WL | | 05 (mc2) ICH | FA | SP | low | Yes | Floodplain and Adjacent decid. Habitats | Effectiveness reduced due to access - otherwise a 1 rating; valley bottom | | Yes | ICHmc2 | 1653 | 0 | 0.00% | Cranberry_River |

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|-----|---|------------------------|-------------------------|----------------------------|-------------------------|-------------------------|----|----|------|------|-----|---|--|--|--------|---------------|------|--------|-----------------|-----------------|
| 139 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | ESSFwv | 2643 | 0 | 0.00% | Kitseguecla |
| 140 | 2 | SA | 05/06 CWH | | | | SU | SP | mid | High | no | | Assume Price ck/Height of land Park BDARY - Confirmation Req'd | Prev. Field Verified | Yes | CWH | 85 | 1 | 0.73% | Kitseguecla |
| 141 | 2 | PF/Kr | SA | | | | SU | FA | High | | no | | | | No | ESSFwv | 1926 | 0 | 0.00% | Skeena_Crossing |
| 142 | 2 | AW | 05/06 CWH | 07 CWH | SA | | SU | FA | mid | High | Yes | | | Avoid permanent roads up tributary to West Kitsuns Ck. | Yes | CWH | 478 | 28 | 5.82% | Kitseguecla |
| 143 | 2 | NP | 06 (wv) / 07 (mc) ESSF | 08 09(wv) / 09 10(mc) ESSF | WL/M | | SU | FA | mid | high | no | | | | No | ESSFwv | 186 | 11 | 5.88% | Kitseguecla |
| 144 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | ESSFwv | 291 | 0 | 0.00% | Kitseguecla |
| 145 | 2 | PF/Kr | SA | | | | SU | FA | High | | no | | | | no | ESSFwv | 1660 | 0 | 0.00% | Kitseguecla |
| 146 | 2 | PF/Kr | SA | | | | SU | FA | High | | no | | | | No | ESSFwv | 3189 | 0 | 0.00% | Kitseguecla |
| 147 | 2 | SA | PF/Kr | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | Mid | no | | | | No | ESSFwv | 3534 | 27 | 0.77% | Kitseguecla |
| 148 | 2 | SA | PF/Kr | | | | SU | FA | High | | no | Large Rocher DeBoule Unit | Revisit Bdary delineation GIS | | No | ESSFwv | 9163 | 6 | 0.07% | Juniper |
| 149 | 3 | 52/53/54 ICH | M | | | | Sp | FA | low | mid | Yes | Skeena R. Bdary | Effectiveness issues - otherwise a 2, possibly 1 | Yes | ICHmc2 | 5915 | 474 | 8.02% | Skeena_Crossing | |
| 150 | 2 | 52/53/54 ICH | 05 (mc2) ICH | | | | SP | FA | low | mid | Yes | Skeena R. Bdary | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 1948 | 388 | 19.90% | Skeena_Crossing | |
| 151 | 2 | 52/53/54 ICH | M | 05(mc1) / 06 (mc2) ICH | | | SP | Fa | low | | Yes | Skeena R. Bdary | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 1832 | 135 | 7.37% | Skeena_Crossing | |
| 152 | 2 | 52/53/54 ICH | | | | | SP | FA | low | | Yes | Skeena R. Bdary | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 1366 | 113 | 8.25% | Skeena_Crossing | |
| 153 | 2 | AW | 05 (mc2) ICH | | | | SU | FA | mid | | no | | Effectiveness issues | | No | ICHmc2 | 458 | 210 | 45.84% | Skeena_Crossing |
| 154 | 2 | 52/53/54 ICH | 05 (mc2) ICH | | | | SP | FA | low | | Yes | Skeena R. Bdary | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 844 | 105 | 12.41% | Skeena_Crossing | |
| 155 | 2 | 52/53/54 ICH | AW | | | | SP | FA | low | | Yes | | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 948 | 57 | 5.98% | Skeena_Crossing | |
| 156 | 2 | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | 08(mc2)ICH | | | SP | FA | low | | Yes | Hgwy 16/Bulkley Valley/New Hazelton | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 2642 | 160 | 6.07% | Hazelton | |
| 157 | 2 | WL | NP | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | | SP | FA | low | | No | | Effectiveness issues | Yes | ICHmc2 | 1397 | 239 | 17.12% | Hazelton | |
| 158 | 2 | 05(mc1) / 06 (mc2) ICH | WL | AW | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | SP | FA | low | | Yes | Moricetown Backroad /Floodplain/Hghwy. 16 | Effectiveness issues | Yes | ICHmc2 | 936 | 73 | 7.80% | Hazelton | |
| 159 | 2 | 52/53/54 ICH | 05 (mc2) ICH | AW | | | SP | FA | low | | Yes | Kispiox For. Dist. Bdary | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 3424 | 958 | 27.96% | Hazelton | |
| 160 | 2 | 52/53/54 ICH | 05(mc1) / 06 (mc2) ICH | | | | SP | FA | low | mid | Yes | Bulkley River/Polygon 156 | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 4271 | 1008 | 23.61% | Hazelton | |
| 161 | 3 | 52/53/54 ICH | | | | | SP | FA | low | mid | Yes | 2-Mile/Hazelton/Skeena | Effectiveness issues; extent and value of 52/53/54 unknown | Yes | ICHmc2 | 3917 | 668 | 17.05% | Skeena_Crossing | |
| 162 | 2 | PF/Kr | SA | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | NO | | | | No | ESSFwv | 2216 | 24 | 1.07% | Hazelton |
| 163 | 2 | PF/Kr | SA | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | no | Kispiox For. Dist. Bdary | | | No | ESSFwv | 1523 | 69 | 4.52% | Suskwa |
| 164 | 2 | 52/53/54 ICH | 05(mc1) / 06 (mc2) ICH | 05 (mc2) ICH | | | SP | FA | low | | Yes | | Effectiveness issues | Yes | ICHmc2 | 738 | 153 | 20.69% | Natlan | |
| 165 | 1 | 52/53/54 ICH | 05(mc1) / 06 (mc2) ICH | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | | SP | FA | low | | Yes | Kispiox For. Dist. Bdary | Effectiveness issues - remain as 1 esp. spring season - potential movement corridor along Suskwa/Harold Price Ck | Yes | ICHmc2 | 3296 | 941 | 28.56% | Suskwa | |
| 166 | 2 | 05 (mc2) ICH | | | | | FA | SU | mid | | no | | Potential movement corridor along Suskwa | Yes | ICHmc2 | 395 | 94 | 23.91% | Suskwa | |
| 167 | 2 | NP | 05 (mc2) ICH | 06 (wv) / 07 (mc) ESSF | | | SU | FA | mid | | no | Kispiox For. Dist. Bdary | | | No | ICHmc2/ESSFwv | 1219 | 25 | 2.01% | Suskwa |
| 168 | 2 | 06 (wv) / 07 (mc) ESSF | SA | WL | PF/Kr | | SU | FA | Mid | High | No | Kispiox For. Dist. Bdary | | | No | ESSFwv | 1268 | 2 | 0.16% | Suskwa |
| 169 | 2 | PF/Kr | SA | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | No | Kispiox For. Dist. Bdary | | | No | ESSFwv | 1160 | 0 | 0.00% | Suskwa |
| 170 | 2 | PF/Kr | SA | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | No | | | | Yes | ESSFwv | 2345 | 132 | 5.65% | Natlan |

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|-----|---|-------------------------|-------------------------|-------------------------|------------------------|----|----|----|------|-----|---------|--|--|---|-----|----------|------|------|--------|---------------|
| 171 | 2 | SA | PF/Kr | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | No | | | | Yes | ESSFwv | 1699 | 43 | 2.50% | Natlan |
| 173 | 2 | PF/Kr | SA | | | | SU | FA | high | | No | | | | Yes | ESSFwv | 2058 | 5 | 0.24% | Hazelton |
| 174 | 2 | PF/Kr | | | | | SU | FA | High | | No | | | | No | ESSFwv | 639 | 1 | 0.19% | Natlan |
| 175 | 2 | SA | PF/Kr | | | | SU | FA | High | | no | | | | Yes | ESSFwv | 1085 | 17 | 1.53% | Shegunia |
| 176 | 2 | SA | PF/Kr | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | | No | | | | No | ESSFwv | 607 | 8 | 1.35% | Shegunia |
| 177 | 2 | PF/Kr | SA | WL/M | 06 (wv) / 07 (mc) ESSF | | SU | FA | High | | No | | | | No | ESSFwv | 589 | 0 | 0.00% | Natlan |
| 178 | 2 | SA | PF/Kr | 06 (wv) / 07 (mc) ESSF | | | SU | FA | High | Mid | Yes | | | | Yes | ESSFwv | 528 | 21 | 4.02% | Natlan |
| 179 | 3 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | | | | FA | SU | Mid | | Yes | | | | Yes | ICHmc1 | 174 | 75 | 43.27% | Natlan |
| 180 | 3 | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | WL | | SP | FA | Low | | Yes | | | Habitat effectiveness and mortality issues due to proximity to roads. Encompasses several class 2 polygons between the Murder Cr. FSR and Elizabeth Lake. Potential movement corridor along Kispiox River. | Yes | ICHmc1 | 4891 | 2169 | 44.34% | Kispiox |
| 181 | 3 | 52/53/54 ICH | 06 (mc1) / 07 (mc2) ICH | M | | | SP | FA | Low | | Yes | | | Habitat effectiveness and mortality issues due to proximity to roads and farms. Encompasses several class 2 polygons between the Muldoe FSR and Kispiox Village. Potential movement corridor along Kispiox River. | Yes | ICHmc1 | 4351 | 807 | 18.55% | Kispiox |
| 182 | 3 | 52/53/54 ICH | M | 06 (mc1) / 07 (mc2) ICH | NP | | SP | FA | Low | | Yes | | | | | ICH mc 2 | 8872 | 1158 | 13.05% | McCully |
| 183 | 2 | PF/Kr | SA | | | | FA | SP | High | | No | | | Known denning area from Shawn Boot (Len Vanderstar) | No | ESSFwv | 1107 | 0 | 0.00% | Upper_Kispiox |
| 184 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | ESSFwv | 5046 | 0 | 0.00% | Deep_Canoe |
| 185 | 2 | PF/Kr | SA | 05 (mc2) ICH | WL | | SU | FA | High | Mid | No | | | | No | ESSFwv | 1593 | 287 | 18.00% | Sweetin |
| 186 | 2 | SA | PF/Kr | | | | SU | SP | High | | No | | | | No | ESSFwv | 2428 | 0 | 0.00% | Sweetin |
| 187 | 2 | SA | PF/Kr | | | | SU | FA | High | | No | | | | No | ESSFwv | 5603 | 3 | 0.05% | Upper_Kispiox |
| 188 | 2 | SA | PF/Kr | 05 (mc2) ICH | | | SU | FA | High | Mid | No | | | Part of Swan Lake Park extension | No | ESSFwv | 4529 | 4 | 0.10% | Upper_Kispiox |
| 189 | 2 | SA | PF/Kr | | | | SU | FA | High | | No | | | Part of Swan Lake Park extension | No | ESSFwv | 3228 | 0 | 0.00% | Upper_Kispiox |
| 190 | 2 | SA | 06 (wv) / 07 (mc) ESSF | PF/Kr | WL | AW | SU | FA | High | | No | 200-300m buffer on east side of East Kispiox River | | Part of Swan Lake Park extension. Probable movement corridor along river. | No | ESSFwv | 3311 | 0 | 0.00% | Upper_Kispiox |
| 191 | 2 | SA | PF/Kr | WL | | | SU | SP | High | | No | | | Part of Swan Lake Park extension | No | ESSFwv | 3169 | 0 | 0.00% | Upper_Kispiox |
| 192 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | WL | | | FA | SU | Mid | | Unknown | | | Part of Swan Lake Park extension. Probable movement corridor along river. | No | ICHmc1 | 810 | 0 | 0.00% | Upper_Kispiox |
| 193 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | WL | AW | NP | FA | SU | Mid | | Unknown | | | Part of Swan Lake Park extension. Probable movement corridor along river. | No | ICHmc1 | 2176 | 0 | 0.00% | Upper_Kispiox |
| 194 | 2 | 05 (mc2) ICH | 06 (mc1) / 07 (mc2) ICH | 05 (mc1) / 06 (mc2) ICH | | | FA | SU | Mid | | Yes | | | Part of Swan Lake Park extension. Probable movement corridor along river. | No | ICHmc1 | 355 | 0 | 0.00% | Upper_Kispiox |
| 195 | 1 | 06 (mc1) / 07 (mc2) ICH | 05 (mc2) ICH | | | | FA | SU | Mid | | Yes | | | Part of Swan Lake Park extension. Known high use fishing area. | No | ICHmc1 | 1305 | 0 | 0.00% | Upper_Kispiox |
| 196 | 2 | PF/Kr | SA | | | | SU | SP | High | | No | | | Edge of District, unknown adjacency issues | No | ESSFwv | 1059 | 1 | 0.14% | Sheladamus |
| 197 | 3 | 06 (wv) / 07 (mc) ESSF | AW | 05 (mc2) ICH | | | SU | FA | Mid | | No | | | Adjacent complexes of Devil's club forest and AW appear to have higher concentrations of both, hence lower rating of 3 here. | No | ESSFwv | 1236 | 645 | 52.15% | Sheladamus |
| 198 | 2 | PF/Kr | SA | AW | | | SU | FA | High | | No | | | | No | ESSFwv | 2320 | 274 | 11.83% | Sheladamus |

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|-----|---|-----------|--------------------------------|-----------------------------|--|--|----|----|------|-----|---------|--|--|--|-----|--------|------|-----|--------|---------------|
| 199 | 2 | AW | 05 (mc2) ICH | | | | SU | FA | Mid | | No | | Possible movement corridor along creek | | No | ESSFwv | 1016 | 309 | 30.41% | Sheladamus |
| 200 | 2 | PF/Kr | SA | NP-w | | | SU | FA | High | | No | | | | No | ESSFwv | 2583 | 8 | 0.30% | Kuldo |
| 201 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | ESSFwv | 1954 | 0 | 0.00% | Larkworthy |
| 202 | 2 | PF/Kr | NP | | | | SU | FA | High | | No | | | | No | MHmm2 | 5966 | 0 | 0.00% | Skeena_West |
| 203 | 2 | PF/Kr | | | | | SU | FA | High | | No | | | | No | MHmm2 | 1866 | 0 | 0.00% | Skeena_West |
| 204 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | MHmm2 | 2076 | 0 | 0.00% | Skeena_West |
| 205 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | South aspect into Skeena R. | | No | MHmm2 | 1588 | 0 | 0.00% | Seven_Sisters |
| 206 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | MHmm2 | 769 | 0 | 0.00% | Skeena_West |
| 207 | 2 | PF/Kr | WL/M | | | | SU | FA | High | | No | | | | No | MHmm2 | 818 | 0 | 0.00% | Skeena_West |
| 208 | 2 | PF/Kr | SA | AW | | | SU | FA | High | | No | | Seven Sisters Park | | No | MHmm2 | 3932 | 0 | 0.00% | Seven_Sisters |
| 209 | 3 | DE | | | | | SP | SU | low | mid | No | | Seven Sisters Park; quality of DE spring habitat is unknown | | Yes | CWHws2 | 1972 | 0 | 0.00% | Seven_Sisters |
| 210 | 3 | 05/06 CWH | 06/07/08/09 MH | 11 CWH | | | SU | FA | mid | | No | | Seven Sisters Park; extent and value of wet+rich habitats unknown | | No | CWHws2 | 655 | 456 | 69.64% | Seven_Sisters |
| 211 | 2 | PF/Kr | | | | | SU | FA | high | | No | | Seven Sisters Park | | No | MHmm2 | 2365 | 0 | 0.00% | Seven_Sisters |
| 212 | 2 | PF/Kr | SA | | | | SU | FA | high | | No | | Seven Sisters Park | | No | MHmm2 | 2417 | 0 | 0.00% | Seven_Sisters |
| 213 | 3 | PF/Kr | SA | | | | SU | SP | high | | No | | Seven Sisters Park; South Aspect; extent and value of habitats unknown | | No | MHmm2 | 1336 | 0 | 0.00% | Seven_Sisters |
| 214 | 2 | SA | PF/Kr | 05/06 CWH | | | SU | FA | high | mid | No | | Seven Sisters Park | | No | MHmm2 | 561 | 0 | 0.00% | Seven_Sisters |
| 215 | 2 | PF/Kr | SA | AW | | | SU | FA | high | mid | No | | Seven Sisters Park | | No | MHmm2 | 1421 | 0 | 0.00% | Seven_Sisters |
| 216 | 2 | PF/Kr | SA | | | | SU | FA | high | | No | | Borders Bulkley FD | | No | ESSFwv | 1039 | 0 | 0.00% | Juniper |
| 217 | 2 | PF/Kr | SA | | | | SU | FA | high | | No | | | | No | ESSFwv | 4264 | 0 | 0.01% | Kuldo |
| 218 | 3 | HS | AW | 05 (mc2) ICH | | | SP | SU | mid | | Unknown | | Old burn; value of AW+HS unconfirmed; revise rating up or down based on ground/aerial assessment | | No | ICHmc1 | 887 | 298 | 33.56% | Larkworthy |
| 219 | 3 | PF/Kr | SA | WL/M | | | SU | FA | High | | No | | Extent and value of PF/Kr and SA in question; otherwise potentially class2; candidate for field assessment | | No | ESSFwv | 1239 | 7 | 0.57% | Atna |
| 220 | 3 | PF/Kr | SA | 08 09(wv) / 09 10 (mc) ESSF | | | SU | FA | High | | No | | Extent and value of PF/Kr and SA in question; otherwise potentially class2; candidate for field assessment | | No | ESSFwv | 1245 | 89 | 7.17% | Atna |
| 221 | 3 | PF/Kr | 08 09(wv) / 09 10 (mc) ESSF SA | | | | SU | FA | High | | No | | Extent and value of PF/Kr and SA in question; otherwise potentially class2; candidate for field assessment | | No | ESSFwv | 2287 | 90 | 3.93% | Atna |
| 222 | 2 | PF/Kr | SA | | | | SU | FA | High | | No | | | | No | ESSFwv | 1199 | 0 | 0.00% | Atna |
| 223 | 3 | PF/Kr | SA | NP | | | SU | FA | High | | No | | Extent and value of PF/Kr and SA in question; otherwise potentially class2; candidate for field assessment | | No | ESSFwv | 909 | 10 | 1.10% | Sicintine |
| 224 | 2 | SA | PF/Kr | | | | SU | FA | high | | No | | | | No | ESSFwv | 718 | 7 | 0.97% | Sicintine |