Mule Deer Ungulate Winter Range (U-7-013) Report

Prince George Forest District
Omineca Region

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This document follows rationale documented in:

Establishing Ungulate Winter Range Objectives – Omineca Region, prepared for the Ministry of Water, Land and Air Protection, Omineca Region, Prince George by Triton Environmental Consultants Ltd. Of Prince George, dated October 25, 2002

Content of this document has been adapted. The above-referenced report contains additional information addressing Ungulate Winter Range management for Moose, Elk, Mountain Goat, and Stone Sheep.

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1.0 Introduction

The Environmental Stewardship Division, of the Ministry of Water, Land and Air Protection (WLAP) is charged with the task of developing Ungulate Winter Range (UWR) objectives to ensure winter survival for ungulate species in the Omineca Region. Ungulate Winter Ranges that meet certain biological and policy criteria must be confirmed under Section 69 of the Operational Planning Regulations (OPR) of the Forest Practices Code (FPC) to be considered in forest management activities regulated by the FPC. In accordance with the OPR, the term "ungulate winter range" means an area that is identified as being necessary for the winter survival of an ungulate species.

As such, UWR objectives need to consider key life requisites including thermal cover, security cover and forage sources as well as potential risk factors such as road access, and conflicts with other user groups (e.g., range management).

Background

Recent amendments to the *Operational Planning Regulation* (OPR) of the *Forest Practices Code* (FPC) have created a specific definition and regulations to provide the legal basis for management of ungulate winter ranges (UWR) on Provincial Forest land. A two-step process was approved for the establishment of UWR under the Regulation. Grandparenting of existing mapped winter ranges that had wildlife management plans and/or strategies, and were managed as UWR, was completed on October 15, 1998. The remaining candidate winter ranges include:

1) those that were previously mapped but not grandparented by October 15, 1998, and
2) those that were accounted for in TSR but were not mapped.

All *Forest Practices Code* candidate and grandparented ungulate winter ranges are to be finalized as quickly as possible, and those meeting the conditions of the MOU confirmed by October 15, 2003. The overall intent is to: (1) identify the areas that are necessary for the winter survival of ungulates; (2) ensure that these areas are distributed in the most effective way for maintaining ungulates across their natural range; and (3) ensure that timber supply impacts do not exceed those included in Timber Supply Review 1 (TSR1) (Stewart Guy pers. comm).

The proposed UWRs for Prince George Forest District are Type 1(c), meaning "*UWR and objectives that have been incorporated in TSR1 and /or TSR2 and were included in TSR1 or TSR2 before April, 1998 but not mapped*."

In accordance with the May 11, 2000 Memorandum of Understanding on Confirmation and Establishment of Ungulate Winter Ranges Previously Included in Timber Supply Reviews, MWLAP Environmental Stewardship Regional Managers will seek to establish Type 1 UWR and objectives up to the maximum levels of timber supply allowances identified in TSR1, and in TSR2 where UWR allowances have been identified above and beyond the levels in TSR1. Where necessary, boundaries and objectives will be refined and made spatially explicit. If further analysis to confirm or vary Type 1 UWR indicates that TSR1 and/or TSR2 allowances are exceeded, then establishment of this UWR will proceed as Type 3.(Type 3 UWR is "*New UWR and objectives that are identified by MWLAP, licensees or other parties, as necessary for the survival of ungulates*.) Similarly, UWRs that were considered part of the inoperable or non-contributing land base at the time of TSR1, but now have timber supply impacts or significant operational impacts due to changes in operability, will be addressed as Type 3.

The Timber Harvesting Land Base (THLB) used to calculate timber impacts for Prince George TSA was as per TSR II.

2.0 Approach and Methods

Consistent with emerging policy direction, proposed management objectives for UWRs is based on the best scientific information available, and focuses on criteria that are measurable, achievable and easily monitored[1]. Using the best information available, each objective is defined using measurable landscape as well as stand level attributes required to maintain the functional integrity of each winter range. This approach is consistent with the FPC intent of 'known ungulate winter range' as well as the anticipated framework of the Forest and Range Protection Act, which emphasizes results or 'specific measurable outcomes'.

An effort was made to ensure all UWR objectives are supported by explicit assumptions and cited literature. Regional information is used whenever possible; however, data from other parts of BC, the Pacific Northwest or Alberta are also used to fill in gaps. Despite these sources of information, knowledge gaps remain. Although our understanding of ungulate winter habitat is improving, there remains few empirical data on habitat thresholds (i.e., how much is enough?), efficacy of access control as well as the spatial and temporal effects of land use management activities (i.e., habitat supply). Professional judgement was required to interpret the available information and propose a course of action. These objectives should be viewed as working hypotheses and should be implemented within an adaptive management framework. To develop mule deer UWR objectives a number of biological as well as potential risk factors were considered including:

[1] Monitoring is defined as a process to determine the extent to which a program, plan or activity achieves its specified goals and objectives

2.1 Biological Criteria

- Snow Interception and Thermal Cover
- Security Cover (screening)
- Forage production (Quality and Quantity)

2.2 Potential Risk Factors

- Access Management (e.g., access control points)
- Conflict between User Groups (e.g., agriculture-elk conflicts)
- Industrial Activities (e.g., timing of timber harvesting, commercial tourism)

The primary purpose of the biological criteria is to recognize that all winter ranges need to provide an adequate supply of habitat over time. As such, UWRs should ideally be managed as biological units designed to meet both landscape as well as stand level objectives. Management objectives need to minimize potential negative effects of forest harvesting activities (e.g., roads, timing of harvest) not only within the winter range but also nearby outside the established winter range boundaries. That is, it is important to recognize that ungulates interact with their environment at both fine and coarse spatial scales (Pearson and Turner 1995). Because designated UWRs will be 'embedded' within the larger landscape matrix, they will be subject to watershed processes and landscape level land management regimes. For example, Landscape Unit seral stage distributions as well as other management regimes outside the UWR have the potential to affect the suitability and overall integrity of the winter range. This may be especially true for UWRs that are relatively small (100-1000 ha)[2], such as most UWRs in Prince George District. Regardless of UWR size, mature forest cover requirements should be met using area controlled harvesting regimes or forest cover constraints that apply over a set time period. The primary purpose of stand-level objectives is to explicitly state the desired or target outcome of stand structure habitat objectives.

Other potential risk factors or 'stressors' that can reduce habitat suitability (e.g., road access, human disturbance) need to be considered because they have the potential to result in habitat displacement and/or mortality. Mule deer were assessed according to their sensitivity to human disturbance in an effort to focus the UWR objectives. Other guiding principles used to develop draft objectives included:

[2] Most proposed UWR boundaries in the Omineca will be relatively small. C. Ritchie. West Kootenays UWR range boundaries varied between 205-33,933 ha (average ~ 2137 ha, from Mowat et al. 2002).

- ❖ Consistency between proposed UWR objectives and Higher Level Plans (i.e., Herrick Creek Local Resource Use Plan, Prince George Land and Resource Management Plan and Cariboo-Chilcotin Land Use Plan)
- ❖ Ensure the objectives incorporate spatial and temporal factors (e.g., rotation length)
- ❖ Ensure objectives reflect regional habitat suitability/capability and are consistent with natural disturbance patterns
- ❖ Recognize that not all of the desired information is currently available. Therefore, use the best information available, document assumptions and adapt over time as necessary (i.e., practice adaptive management).

The areas identified and corresponding objectives focus on key winter habitat requirements, especially those that are believed to affect functional aspects of ungulate winter range (e.g., crown closure, roads). A rationale is provided for the recommended objectives. As best as possible, UWR objectives reflect habitat suitability and capability. Objectives are tailored to local ecological conditions and reflect biogeoclimatic subzone variants where possible.

Winter range boundaries have been identified using appropriate algorithms developed to delineate high suitability winter habitat polygons. Factors that influence ungulate population viability and survival that were not explicitly addressed in this report include intra and inter-specific competition and predation risk. Competing land use objectives and timber supply impact have been considered in the development of UWR objectives.

It is recognized that ungulate winter habitat requirements are associated with both topographic as well as vegetative features. Topographic features (elevation, aspect, and slope) are a critical component of ungulate winter range, and have been addressed during the selection of UWR boundaries. Presence and age of Douglas-fir was another key component in the selection process.

3.0 Mule Deer Ungulate Winter Range Criteria: Winter Ecology and Habitat Requirements – Biological Rationale

3.1 Thermal Cover

A review of the pertinent literature suggests that the ability for a forest stand to intercept snow and provide both thermal cover and accessible forage are the primary habitat variables influencing deer winter habitat selection in British Columbia and the Pacific Northwest (Hanley 1989, Nyberg *et al*. 1990, Kirchhoff and Schoen 1987, Armleder *et al* 1994, Terry and Simpson 1996). In particular, trees with large interlocking crowns help reduce snow accumulation and significantly reduce energy expenditures by deer, which increases their

probability of survival (Parker et al. 1984, Armleder *et al.* 1986, Kirchhoff and Schoen 1987). Parker *et al*. (1984) reported deer energy expenditures increased by 50% in 25 cm of snow and more than doubled in 40 cm, which represented about 60% of brisket height. Most studies have cited critical snow depths > 40 cm restrict deer movement. In addition, to increased energy demands, deeper snow depths bury shrubs, which decreases forage availability (Waterhouse *et al*. 1994).

The ability of forest stands to provide adequate snow interception cover should be a key component of mule deer winter range objectives. Because snow accumulation varies by biogeoclimatic subzone, all WLAP regions have stratified their mule deer winter ranges by snow pack zones using provincial climatic data. This appears to be a reasonable approach, and it is recommended that the Omineca Region also stratify their objectives by deep and very deep snowpack zones as a first approximation (see below). It should be emphasized, however, that very deep snow pack zones (e.g., ICHwk, ICHvk2) also have limited capability to support mule deer populations even though canopy closures are typically greater in the ICH compared to the SBS (Safford 2001).

In order to provide snow interception cover, an easily measured stand attribute variable is required. Despite some of the methodological problems, percent crown closure is used most often to manage snow interception cover (Armleder and others). In B.C., typical crown closures recommended to retain mule deer winter range vary by biogeoclimatic subzone. Armleder et al. (1994) reported mule deer in the IDF biogeoclimatic zone used stands with moderate crown closures (36-65%) more often compared to their relative availability. The West Kootenay UWR objectives suggest between 30-50% crown closure of trees >80 years old. These objectives were developed from radio-telemetry studies and Predictive Ecosystem Mapping projects. Other areas in the southern interior have recommended crown closures to be at least 46% post harvest.

In order to provide objectives for snow interception cover in the Omineca Region, knowledge of local mule deer winter habitat use and specific stand structure attributes are required. A number of winter tracking studies (FRBC) have been conducted to identify the northern distribution of mule deer winter habitat use and movement patterns in the Omineca Region including the Prince George, Vanderhoof, Fort St. James and Robson Valley Forest Districts (D'Arcy and Storke 1998, Safford and D'Arcy 2000, Safford 2001). Radio-collared studies of deer are limited to the Robson Valley (Ingham 2000).

Overall, these studies have reported high suitability mule deer winter habitats occur on mesic, subxeric and xeric sites within the drier SBS subzone variants including the SBSdk, SBSdw2, SBSdw3 and SBSdh, (D'Arcy and Storke 1998, Keystone 1998). These ecosystems are represented by the mature and old structural stages of the 01, 02, 03 and 04 sites series all of which have a significant component of Douglas fir. Visual estimates of crown closure vary

between 30-85% (D'Arcy and Storke 1998, Timberline 1998) for these site series. In the wetter subzones and variants common in the Prince George District, local effects can play a large role in site suitability for UWR. This information has been applied where known. In the Robson Valley, mule deer preferred forests dominated by mature spruce and Douglas fir forest with canopy closures > 55% (Ingham 2000).

In addition to crown closure, basal area (m^2/ha) has also been recommended to manage stand structure on mule deer winter ranges in the IDF biogeoclimatic zone (MOF 1999). Basal area is easily measured and provides an effective means of monitoring both wildlife and timber objectives. Depending on stand-level objectives and crown closure class, this approach suggests retaining a total target stand basal area as well as basal area of large diameter (> 40 cm DBH) Douglas-fir trees. In a related study, these researchers have also reported that low volume partial-cutting (20% single tree selection) has not affected mule deer use, which suggests their basal area retention targets are adequate to maintain deer winter attributes (Armleder et al. 1998). Although these methods have been developed in the IDF (NDT 4), similar approaches could be developed for winter ranges in this region. Other studies have also found basal area to be a useful predictor of snow interception. In the Fort St. James and Vanderhoof Forest Districts, D'Arcy and Storke (1998) found a significant relationship between basal area and snow depth in Douglas-fir stands in the SBSdw3. Forest stands with greater basal area (46-59 m^2/ha) resulted in significantly reduced snow depths (8-19 cm). Prescribing basal area retention targets to manage stand structure on winter ranges is useful because it is easily measured and focuses stand management on larger trees, which have better snow interception ability. A target stem size of 40 cm. dbh or greater is optimal.

3.2 Winter Forage

To maintain mule deer winter range, adequate supplies of forage are also required. Mule deer browse occurs in a variety of forested as well as non-forested ecosystems including cutblocks and cultivated fields. Stands with canopy gaps, for example, provide better developed shrub layers and preferred browse species including saskatoon, Douglas maple, and common snowberry. Habitat suitability is often enhanced by the close proximity to natural non-forested ecosystems (openings), which provide higher shrub cover (>30%) of preferred browse species (Keystone 1998, Keystone 1999). Although mule deer browse primarily on shrubs, they also will feed on arboreal lichen litterfall (Stevenson 1985, Waterhouse et al. 1991, Waterhouse et al. 1994).

Overall, the best available information indicates mule deer winter range objectives should focus on the following stand-level features:

(1) Tree Species Composition (Overstory)
(2) Crown Closure and/or Basal Area
(3) Age Class and Stand Structure

(4) Shrub Species Composition and Abundance

3.3 Interspersion of Thermal Cover and Foraging Areas

In addition to these stand level features, an estimate of the total area retained in mature forest is required. The optimum mix of thermal cover, security cover and foraging areas have not been studied locally. However, extensive research in the Pacific Northwest has documented that a 60:40 ratio of forage: cover is considered optimal for winter mule deer habitat (Thomas et al. 1979).

3.4 Access Management and Human Disturbance

Roads generally decrease the value of habitat for mule deer (Towry 1984). The estimated zone of influence extends for 100 m from the road into adjacent habitat. As such, it is recommended that roads be located away from UWR. In particular, avoid dry south facing slopes. If roads are required ensure visual screen buffers and deactivate as soon as possible.

Harper and Eastman (2000) reviewed the potential impacts of recreation activities on various wildlife species. In general, the availability of information suggests that human disturbances on winter ranges (e.g., snowmobile) can result in deer habitat displacement. However, the severity of response appears to vary with the intensity of human use (Dorrance et al. 1975, Freddy et al. 1986.) Freddy suggested persons afoot including snowmobiles should remain >190 m from deer to prevent overt movement responses.

4.0 Mule Deer Ungulate Winter Range Criteria

Warning

The following planning objectives are a unofficial consolidation of the management objectives established within the legal order pertaining to this Ungulate Winter Range. Official ungulate winter range orders may be accessed and downloaded from this Web Site http://wlapwww.gov.bc.ca/wld/uwr/ungulate_app.html .

While every attempt has been made to ensure accuracy and completeness, these management objectives cannot be guaranteed. Users should always refer to the official order, which maybe amended from time to time.

The following proposed management objectives reflect the goal to maintain mule deer winter range to provide high suitability snow interception, cover and foraging opportunities (shrubs, conifer and arboreal lichen litterfall):

4.1 Habitat Condition:

1. Within each ungulate winter range (UWR) Unit numbers PGD-004, PGD-008, PGD-010, PGD-011, PGD-013, PGD-015, PGD-023, PGD-026, PGD-027, PGD-028, PGD-029, PGD-031, PGD-038, PGD-040, PGD-041 through PGD-052, PGD-055, PGD-063, PGD-064, and PGD-065, maintain a minimum of 40% of winter range area in age class 8 (>140 years) or greater at all times with a crown closure of >56% (Douglas-fir, spruce). Stands with higher basal area (composed of larger trees) are preferred.

2. Within each UWR Unit numbers PGD-001, PGD-002, PGD-0012, PGD-014, PGD-019, PGD-020, PGD-021, PGD-022, PGD-035, PGD-054, and PGD-066, maintain a minimum of 50% of stands in age class 8 (>140 years) or greater and with a crown closure of mature forest >66% (Douglas fir, spruce). Stands with higher basal area (composed of larger trees) are preferred.

3. Within all UWR units, maintain species composition as Douglas-fir leading, with a minimum of 50% Douglas-fir. Where Douglas-fir presence is below the target range, select white spruce, hemlock or cedar to fill shortage (preferred over pine or tamarack), and choose silvicultural practices to increase Douglas-fir presence.

4. Within all UWR units, Manage for a desired plant community with abundant shrub species composition that will maintain a 30-40% cover of deciduous shrubs that are preferred browse species including, but not limited to, Saskatoon (*Amelanchier alnifolia*), Prickly Rose (*Rosa acicularis*), Common Snowberry (*Symphoricarpos albus*), Choke Cherry (*Prunus spp*.), Red Osier Dogwood (*Cornus stolonifera),* Willow sp, (*Salix* sp), Black Twinberry (*Lonicera involucrate),* Highbush Cranberry (*Viburnum edule),* Black Huckleberry (*Vaccinium membranaceum*, Douglas Maple (*Acer galbrum)* and Trembling Aspen regeneration *(Populus* tremuloides)

4.2 Timber Harvest

5. Within UWR Unit numbers PGD-005 and PGD-006, no commercial forest harvesting.

6. Within all UWR units except Unit Numbers PGD-005 and PGD-006, keep timber harvesting openings within cutblocks irregular in shape, < 5 ha in size and < 250 m wide.

7. Within all UWR units schedule winter forest operations during the period of least disturbance to mule deer. Avoid winter forestry development (including harvesting) between December 15th and April 15th.

4.3 Forest Health Management

8. For all UWR units

a) Maintain high suitability winter habitat attributes by managing bark beetle populations to maintain low levels of beetle brood in the UWR “Low levels” are those that still allow for maintenance of high suitability winter habitat attributes. Sanitation thinning (partial harvest) may occur within UWR, only if it is within

the limits of UWR Habitat Condition objectives, unless a variance is approved by the MWLAP statutory decision maker.

b) Where pest impacts render unreachable the retention of the required levels of functional live forest cover, treatment may be varied. An approach applying the "Habitat Condition rationale to the degree possible for the stand, combined with a silviculture plan to restore the needed values, may be applied if a variance is approved by the MWLAP statutory decision maker

4.4 Fire Management

9. Within all UWR units, reflect UWR objectives in appropriate Fire Management Plans.

10. Consider the use of prescribed fire to reduce understory fuel loading and improve UWR
forage characteristics.

4.5 Range Management

11. For all UWR units

a) Avoid displacement of Mule Deer by livestock.

b) Livestock use will not exceed more than 10% of current year's shrub growth.

c) Manage for a desired plant community with abundant shrub species composition that will maintain a 30-40% cover of deciduous shrubs that are preferred browse species including, but not limited to, Saskatoon (*Amelanchier alnifolia*), Prickly Rose (*Rosa acicularis*), Common Snowberry (*Symphoricarpos albus*), Choke Cherry (*Prunus spp*.), Red Osier Dogwood (*Cornus stolonifera),* Willow sp, (*Salix* sp), Black Twinberry (*Lonicera involucrate),* Highbush Cranberry *(Viburnum edule),* Black Huckleberry (*Vaccinium membranaceum,* Douglas Maple *Acer galbrum)* and Trembling Aspen regeneration *(Populus tremuloides).*

d) No livestock grazing will occur on south facing slopes until shrub leaf out.

e) New range development features such as, but not limited to, waterholes, fences, salt blocks, corrals, access road and trails, that would result in concentration of livestock in the UWR unit will not be developed within the UWR unit.

4.6 Access Management

12. Within all UWR units, manage road access to limit human disturbance to mule deer.

a) Where reasonable alternatives exist, plan the location and design of major/secondary access routes to avoid the UWR. b) Construct roads to the lowest class practicable while maintaining safety and environmental standards.

13. Within all UWR units, minimize new road construction and other access development.

a) Maintain the existing length of active forest industry oriented roads by permanently closing and rehabilitating roads in a 1:1 ratio to the amount of new road construction.

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b) New roads for harvesting access will be permanently closed and rehabilitated after harvest occurs. Where the access road is needed for multiple-year harvesting, take steps to avoid non-industrial use between harvest entries.
c) Roads for mineral or oil and gas exploration or development may be constructed in UWR where workable alternatives do not exist. Management objectives to address point 12 above and to limit open public use in the spirit of 13 (b) are to be employed.

14. Within UWR Unit numbers PGD-005 and PGD-006, do not construct any new roads.

4.7 Old Growth Management Areas

15. Where UWR overlaps an Old Growth Management Area (OGMA), the forest cover management objectives for that portion of the UWR which is within the OGMA will be the forest cover management objectives for the OGMA. Access management objectives will be UWR access management objectives. That portion of the UWR outside the OGMA will be managed to UWR management objectives.

5.0 Strategic Land Use Plan Recommendations

Management objectives for mule deer have been identified in the Cariboo-Chilcotin Land Use Plan (CCLUP), the Prince George Land and Resource Management Plan (PGLRMP), and in the Herrick Creek Local Resource Use Plan (Herrick Creek LRUP). The Cariboo-Chilcotin Land Use Plan addresses a small area along the southern boundary of Prince George Forest District. The Prince George LRMP provides an overview policy direction for the planning area. The Herrick Creek LRUP covers a portion of the district in more detail.

The Cariboo-Chilcotin Land Use Plan establishes Ungulate Winter Range for Mule Deer along the Blackwater (West Road) River, in the extreme southwest corner of the district. These UWR areas received approval in 1998 under the grandparenting provisions for UWR found in the Forest Practices Code. They are shown on Map 1.

The Prince George LRMP divides the Prince George district into 54 Resource Management Zones (RMZs). Of these, 20 are identified for provincial parks or provincial park area additions. Of the remaining 34 RMZs, 11 contain direction for the provision of ungulate winter range for deer. The identified **Objective** is to:

"Manage deer habitat to provide the opportunity for population levels to be maintained." (or, in some cases, "*increased")*.

With identified **Strategies** for:

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"BC Environment or designate to identify critical deer habitat" and "Manage critical Douglas-fir stands for mule deer habitat requirements."

Many of these RMZs contain an additional **Objective** to:

"Maintain Douglas-fir component"

with identified **Strategies** to:

"Retain large old Douglas-fir during forestry operations in order to provide structural diversity" and

"Encourage partial cutting systems in Douglas-fir stands, where stand attributes allow" and additionally in most:

"Retain some Douglas-fir where they constitute minor components of the stand and where stand attributes allow." And

"Encourage a component of the regenerated stand to be Douglas-fir where Douglas-fir was a component of the harvested areas."

It is noteworthy that RMZ 31 (TFL 30) contains the Douglas-fir strategies without any deer winter range direction.

The proposed ungulate winter range areas and strategies are consistent with this direction provided in the Prince George LRMP.

The Herrick Creek LRUP addresses a portion of the district characterized by higher precipitation, deeper snow, and higher elevations. Deer are mentioned as not well suited to the extremes found here, and no objectives or strategies to manage for deer are proposed. There is no conflict between the proposed UWR and the Herrick Creek LRUP.

6.0 Forest Industry Consultation

These proposed UWRs are located within the Prince George Timber Supply Area, Prince George Forest District, and are within the operating areas of a number of Forest Licensees. These licensees and contact addresses are listed in Appendix 1. Copies of this Ungulate Winter Range proposal have been provided to all the listed licensees, with an invitation to provide comment for consideration in the decision-making process. Responses have been evaluated and considered during final review of proposed UWR, prior to submission for approval.

Proposed Ungulate Winter range does not include any woodlot area.

7.0 First Nations Consultation

These proposed UWRs are located within areas of interest to a number of First Nations. These First Nations and contact addresses are listed in Appendix 2. Copies of this Ungulate Winter Range proposal have been provided to all the listed First Nations, with an invitation to provide comment for consideration in the decision-making process.

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No UWR is proposed for designated Indian Reserve land.

UWR PGD-054 (516.9 ha. total area) overlaps Lheidli T'ennah Treaty Negotiations Planning Polygon 24 A, B, and C by an area of 66.0 ha. During negotiations, this Planning Polygon has been removed from the Lheidli T'ennah Agreement-in-Principle dated July 26, 2003 and signed between the Lheidli T'ennah, the Province of British Columbia, and Canada.

UWR PGD-007 overlaps Lheidli T'ennah Treaty Negotiations Planning Polygon 114 A and B. This draft UWR is priority 2 UWR, meaning identified for information and further planning- not proposed at this time.

With respect to applicable lands, the Lheidli T'ennah Agreement-in-Principle of July 26, 2003, Wildlife section, states:

14. The Minister will retain authority to manage and conserve Wildlife and Wildlife habitat and will exercise authority in a manner consistent with the Final Agreement.

UWR management will be conducted in a manner consistent with this direction.

Completion of the Lheidli T'enneh Final Agreement document may provide additional direction relevant to UWR designation. UWR designations will be revisited in response to the Final Agreement, if necessary. This assurance has been provided to Lheidli T'enneh Treaty Research staff.

No response to proposed Ungulate Winter Range was received from other First Nations in response to the referral.

8.0 Provincial Government Resource Ministries Referral

Ministry of Energy and Mines: The proposed ungulate winter ranges have been forwarded to the Ministry of Energy and Mines, Victoria for review and comment.

Ministry of Forests: The proposed ungulate winter ranges have been forwarded to the Ministry of Forests, Prince George Forest District for review and comment.

Ministry of Sustainable Resource Management: Staff from this ministry have assisted with analysis of proposed ungulate winter range. The proposed ungulate winter ranges have been forwarded to the Ministry of Sustainable Resource Management, Omineca Region for review and comment.

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9.0 Summary of Referral Responses

Forest Licensees	
Canadian Forest Products Limited, P. O. Box 9000, Prince George, BC V2L 4W2	>No response received.
Carrier Lumber Ltd., 203- 1717 3rd Avenue, Prince George, BC V2L 3G7	>No response received.
Dunkley Lumber Ltd., 17000 Dunkley, Hixon, BC V0K 1S0	>Requested digital file for FDP map overlay- provided as requested. >Compromised uwr identified, map revised. >Map error corrected.
Lakeland Mills Ltd.' P. O. Box 1358, Prince George, BC V2L 4V4	>Stated no UWR proposed for their operating area- no concerns.
The Pas Lumber Company Ltd., P. O. Box 879, Prince George, BC V2L 4T8	>The Pas Lumber Company's operating area not affected. >Information and map retained for future reference.
Stella-Jones Inc., 7177 Pacific Street, Prince George, BC V2N 5S4	>No response received.
T.R.C. Cedar Ltd., P. O. Box 757, McBride, BC V0J 2E0	>Discussion held over draft PGD-008, which is mixed Douglas-fir/pine, heavily attacked by pine beetle. Revisions to guidelines re: catastrophic occurrence.

Weldwood of Canada Ltd., P. O. Box 2000, Quesnel, BC V2J 3J5	>Concern expressed over desirability of partial-cut prescriptions in SBSmw and dw- partial cut better suited to dryer ecosystems. UWR objectives are consistent with this view. >Questioned if intent is to convert pine-leading stands- UWR objectives lead to emphasis on Douglas-fir, but with room for mixed-stand composition to suit growing conditions. >Requested more flexibility on block size to address operational requirements and salvage operations. Harvest block size objective increased from 1 ha. to 5 ha. >Do not support avoidance of winter harvest in UWR. >Question desirability of retaining dead trees to meet crown closure/overstory requirements- request practices to address catastrophic occurrences. Agreed- procedures for catastrophic occurrence management have been added. >Access management needed through silviculture window, before closing access by deactivation. This can be achieved through temporary closure post-harvest, with deactivation after silviculture activities have progressed.
Timber Sales Branch, Prince George Forest District, 2000 South Ospika Boulevard, Prince George, BC V2N 4W5	>Areas of overlap with proposed Timber Sales were identified. Agreed that uwr guidelines would change the site prescription- harvesting could still occur within guidelines. >Concern expressed about whether guidelines can even be met in high-infestation areas, due to mortality. Changes to the guidelines to provide latitude for addressing catastrophic beetle activity requested. Revised wording produced.

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First Nations	
Lheidli T'enneh First Nation Band Office 1041 Whenun Road Prince George, B.C. V2K 5X8	>MoF pointed out overlap between draft uwr PGD-007 and Lheidli T'ennah Proposed Land Package. PGD-007 not proposed at this time. >No response as of August 21/03. Telephone follow-up lead to request for map and report by Negotiations Office staff. Map and report hand-delivered August 21, discussed with Michael Bosoki and one additional Treaty Researcher. Digital copy provided for their GIS/mapping person Gordon Haines. >No material conflict with current Agreement in Principle between Lheidli T'enneh, Province of BC, and federal government. Revisions to UWR may be needed once treaty Final Agreement is completed (currently under preparation).
Nazko Band Government 469B Anderson Dr.. Quesnel, B.C. V2J 5J4	>No response received. >telephone follow-up Sept. 10/03: Chief Dolores Alec directed me to the Treaties Office, Terrance Paul. Dialogue to occur when Mr. Paul becomes available.
Carrier Sekani Tribal Council 1460 - 6th Ave. Prince George, B.C. V2L 3N2	>No response received. >Sept. 10/03: Tribal Chief Harry Pierre stated that "deer corridors are a good thing to do", but prefers that a "big enough area for them to survive" is maintained. No concerns raised.
McLeod Lake Band General Delivery McLeod Lake, B.C. V0J 2G0	>No response received. >telephone follow-up Sept. 9/03: Chief Harley Chingee stated that he would discuss with their resource person. >Sept. 15/03: Chief Harley Chingee stated no concerns with the proposal, concerned about current low mule deer numbers, confirmed by letter.

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Saik'uz First Nation R.R. 1, Site 12, Comp 26 Vanderhoof, B.C. V0J 3A0	>No response received. >telephone follow-up Sept. 10: Spoke with Harold Alexis of Saik'uz First Nation Treaty Office, no concerns with the concept. He will review the map and call if he has any concerns.
Nak'azdli First Nation (Band Office) P.O. Box 1329 Ft. St. James, B.C. V0J 1P0	>No response received.

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Provincial Government Resource Ministries	
Ministry of Forests Prince George Forest District, 2000 South Ospika Boulevard, Prince George, BC V2N 4W5	>Identified areas of overlap with current First Nations land activities- overlaps addressed. >Expressed concern over avoiding winter logging in UWR, noted most sites suitable to summer logging; “likely not a significant issue operationally”. Try as is, revise if experience warrants. >Forest Health: expressed concerns that guidelines do not allow enough latitude to address catastrophic infestations- guidelines revised. >Timber Supply Analysis: the Regional Timber Supply Analyst has verified targets and area accounting practice. Proposed area is within budget. >Range Management: concern over restricting any expansion of Animal Unit Month allotments and impediment to new grazing tenures. Agreed to go to ‘results based’ approach, specifying maximum browse use levels and seasons in the Range Use Plan. Only 2 range use units overlap proposed UWR at this time. > Some UWR locations proposed within TFL 53 (Dunkley Lumber). These blocks deferred, since current work addresses Prince George TSA.
Ministry of Energy and Mines PO Box 9326, Stn Prov Govt, Victoria, B.C. V8W 9N3	> Access management expectations within the provincial “two zone” intent has been clarified in response to concerns raised by MEM, with additional guideline direction produced.

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Ministry of Sustainable Resource Management, 3rd Floor, 1011 4th Avenue, Prince George, BC V2L 3H9	>Discussion held over forest industry reliance on chemical brush control versus browse for ungulates. Agreed that spot treatments (as opposed to broadcast) and mechanical treatment are viable options. >OGMA versus uwr objectives discussed- agreed that best to not overlap, developed approach where overlap unavoidable. Overlaps as proposed found to be not an issue.

10.0 References

(1) Establishing Ungulate Winter Range Objectives- Omineca Region, Triton Environmental Consultants- Prince George, October 25 2002.

(2) Memorandum of Understanding on Establishment of Ungulate Winter Ranges and Related Objectives, MWLAP, 2003.

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Appendix 1 - Summary Table of Mapped Ungulate Winter Range

This table summarizes the mapped UWR by priority, by area, and by area in the Timber Harvesting Land Base (THLB).

UWR_LABEL	Total Area (ha.)	THLB (ha.)	Priority
PGD-001	93.6	0.0	Proposed UWR
PGD-002	37.6	0.0	Proposed UWR
PGD-005	90.7	42.5	Proposed UWR
PGD-006	231.8	59.4	Proposed UWR
PGD-008	671.8	582.3	Proposed UWR
PGD-009	42.1	19.9	Proposed UWR
PGD-010	715.5	329.2	Proposed UWR
PGD-011	238.6	89.5	Proposed UWR
PGD-012	214.5	132.4	Proposed UWR
PGD-013	369.6	288.8	Proposed UWR
PGD-019	722.5	552.2	Proposed UWR
PGD-020	492.4	357.3	Proposed UWR
PGD-026	60.5	51.5	Proposed UWR
PGD-027	60.6	59.5	Proposed UWR
PGD-028	44.6	43.3	Proposed UWR
PGD-029	63.6	62.8	Proposed UWR
PGD-031	61.0	45.7	Proposed UWR
PGD-041	24.3	24.3	Proposed UWR
PGD-042	250.4	227.0	Proposed UWR
PGD-043	52.4	51.6	Proposed UWR
PGD-044	74.8	67.2	Proposed UWR
PGD-045	120.9	115.3	Proposed UWR
PGD-046	86.4	65.7	Proposed UWR
PGD-047	45.7	45.2	Proposed UWR
PGD-048	33.9	32.8	Proposed UWR
PGD-049	12.2	10.5	Proposed UWR
PGD-050	9.7	9.0	Proposed UWR
PGD-051	9.8	8.0	Proposed UWR
PGD-052	8.9	5.6	Proposed UWR
PGD-054	516.9	378.3	Proposed UWR
PGD-055	165.5	160.4	Proposed UWR
PGD-063	374.8	70.6	Proposed UWR
PGD-064	597.6	154.9	Proposed UWR
PGD-065	111.2	12.2	Proposed UWR
PGD-066	177.1	29.4	Proposed UWR
PGD-067	5.7	5.7	CCLUP Approved UWR
PGD-068	21.3 .	21.3	CCLUP Approved UWR
PGD-069	39.1	38.0	CCLUP Approved UWR
PGD-070	8.6	8.6	CCLUP Approved UWR
PGD-071	12.6	0.0	CCLUP Approved UWR
PGD-072	30.5	28.1	CCLUP Approved UWR
PGD-073	16.1	16.1	CCLUP Approved UWR
PGD-074	38.8	6.6	CCLUP Approved UWR
PGD-075	26.7	8.7	CCLUP Approved UWR

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PGD-076	43.2	34.7	CCLUP Approved UWR
PGD-077	0.0	0.0	CCLUP Approved UWR
PGD-078	7.4	4.4	CCLUP Approved UWR
PGD-079	52.8	52.8	CCLUP Approved UWR
PGD-080	19.2	19.2	CCLUP Approved UWR
PGD-081	6.5	6.5	CCLUP Approved UWR
PGD-082	4.8	4.8	CCLUP Approved UWR
PGD-083	13.3	12.5	CCLUP Approved UWR
PGD-084	15.9	15.9	CCLUP Approved UWR
PGD-085	1.1	1.1	CCLUP Approved UWR
PGD-086	8.0	0.0	CCLUP Approved UWR
PGD-087	39.0	39.0	CCLUP Approved UWR
PGD-088	27.0	0.0	CCLUP Approved UWR
PGD-089	110.0	9.4	CCLUP Approved UWR
PGD-090	1451.5	82.9	CCLUP Approved UWR
PGD-091	5.8	0.0	CCLUP Approved UWR
PGD-092	10.8	0.0	CCLUP Approved UWR
PGD-093	167.8	60.9	CCLUP Approved UWR
PGD-094	10.6	10.6	CCLUP Approved UWR
PGD-095	283.0	126.8	CCLUP Approved UWR
PGD-096	3.2	0.0	CCLUP Approved UWR
PGD-097	33.7	11.1	CCLUP Approved UWR
PGD-098	5.4	5.4	CCLUP Approved UWR
PGD-099	10.5	0.0	CCLUP Approved UWR
PGD-100	5.6	0.0	CCLUP Approved UWR
PGD-101	8.8	0.0	CCLUP Approved UWR
PGD-102	4.8	0.0	CCLUP Approved UWR
PGD-103	7.2	0.0	CCLUP Approved UWR
PGD-104	17.6	17.6	CCLUP Approved UWR
PGD-105	0.9	0.9	CCLUP Approved UWR
PGD-106	27.6	0.0	CCLUP Approved UWR
PGD-107	1.3	0.3	CCLUP Approved UWR
PGD-108	0.2	0.2	CCLUP Approved UWR
PGD-109	8.4	6.5	CCLUP Approved UWR
PGD-110	0.7	0.1	CCLUP Approved UWR
PGD-111	4.3	3.4	CCLUP Approved UWR
PGD-112	2.2	0.0	CCLUP Approved UWR
PGD-113	45.0	41.2	CCLUP Approved UWR
PGD-114	3.4	0.0	CCLUP Approved UWR
PGD-115	5.3	0.0	CCLUP Approved UWR
PGD-116	1.9	0.0	CCLUP Approved UWR
PGD-117	16.8	16.8	CCLUP Approved UWR
PGD-118	6.2	0.3	CCLUP Approved UWR
PGD-119	7.0	0.0	CCLUP Approved UWR
PGD-120	158.9	43.7	CCLUP Approved UWR
PGD-121	30.2	est. 24.0	CCLUP Approved UWR
PGD-122	1.9	est. 0.5	CCLUP Approved UWR
PGD-123	0.2	est. 0.0	CCLUP Approved UWR

Total (ha.) Proposed UWR	6883.5
THLB (ha.) Proposed UWR	4184.3

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Total (ha.) CCLUP Approved UWR	2533.0
THLB (ha.) CCLUP Approved UWR	786.6

Appendix 2 - Timber Supply Impacts Modeling

The Ungulate Winter Range proposal was forwarded to Doug Beckett, Timber Supply Analyst, Ministry of Forests for his evaluation. His report of July 25, 2003 follows:

Please be advised that it has been brought to our attention that some of the UWR_LABEL mule deer winter range units likely overlap TFL 53, private land and first nation land. I have assumed this problem does not exist for any of the UWR_LABEL units noted in this proposal.
(note: this issue resolved)

For the following impact assessment:

- it has been assumed all of the total area is forested. In reality, it is likely some of the total area is not forested. In that regard, the following impact assessment likely overestimates the effective THLB implications by a small amount; and
- the resultant timber harvesting land base (THLB) as per Prince George TSA TSRII assumptions was utilized (this is not consistent with the statements on page 1 in the Background section of the document).

MANAGEMENT OBJECTIVES FOR GROUP 1:

The desire is to maintain at least 40% of the forested area 140 years or older:

- ≥ 40% > 140 years:

If we assume all of the total area is forested, and over time all of the excluded forest will become older than 140 years, it would be possible to meet this objective by maintaining 54.3 hectares (2%) of the timber harvesting land base (THLB) as 140 years or older. In reality, this will not meet the intended mule deer objectives. As such we will assume that over time at least 2/3 rds of the mule deer objective will be met from the excluded forest. For the purposes of estimating timber supply implications, we will assume at least 568.5 hectares of THLB will be maintained as 140 years or older - which equates to an implied rotation of 180 years. **As the PG TSA in the TSRII Analysis Report indicates the average harvest age over the long-term to be about 100 years, this objective has an effective impact on the THLB of 44% or 1 149.6 hectares.**

Calculations detailing above statement:

4 264.1 ha total area, 2 612.8 ha THLB, and 1 651.3 ha is excluded forest
4 264.1 ha * .40 = 1 705.6 ha must be 140 years or older
1 705.6 ha / 3 = 568.5 ha of THLB must be 140 years or older
568.5 ha / 2 612.8 * 100 = 22% of the THLB must be 140 years or older
100% / (100% - 22%) * 140 years = 180 year implied rotation
100 - ((100 years / 180 years) * 100) = 44% effective impact
2 612.8 ha * 0.44 = 1 149.6 ha

The desire is to maintain between 10 to 40% of the area with shrub cover:

- ≤ 40% < 40 years:

This means up to 1 705.6 hectares, of the 2 612.8 hectares of THLB can be younger than 40 years at any point in time - which can be achieved with an implied rotation of 62 years or longer. **As the average harvest age over the long-term is about 100 years for the PG TSA in the TSRII Analysis Report, this objective has no THLB or harvest forecast implications.**

Calculations detailing above statement:
4 264.1 ha total area, 2 612.8 ha THLB, and 1 651.3 ha is excluded forest
4 264.1 ha * 0.40 = 1 705.6 ha can be 40 years or younger
1 705.6 ha / 2 612.8 ha * 100 = 65% of the THLB can be 40 years or younger
(100% / 65%) * 40 years = 62 year implied rotation

- ≥ 10% < 40 years:

This means at least 426.4 hectares, of the 2 612.8 hectares of THLB must be younger than 40 years at any point in time - which can be achieved with an implied rotation of 250 years or less. **As the average harvest age over the long-term is about 100 years for the PG TSA in the TSRII Analysis Report, this objective should be rather easy to obtain as long as at least 40% of the harvested young stands provide adequate shrub cover. There may be a minimal unquantified effective THLB reduction and harvest forecast reduction as a result of some lost productivity from the shrub and brush competition. Otherwise, this objective has no THLB or harvest forecast implications.**

Calculations detailing above statement:
4 264.1 ha total area, 2 612.8 ha THLB, and 1 651.3 ha is excluded forest
4 264.1 ha * 0.10 = 426.4 ha must be 40 years or younger
426.4 ha / 2 612.8 ha * 100 = 16% of the THLB must be 40 years or younger
(100% / 16%) * 40 years = 250 year implied rotation

MANAGEMENT OBJECTIVES FOR GROUP 2:

The desire is to maintain at least 50% of the forested area 140 years or older:

- ≥ 50% > 140 years:

If we assume all of the total area is forested, and over time all of the excluded forest will become older than 140 years, it would be possible to meet this objective by maintaining 321.2 hectares (22%) of the timber harvesting land base (THLB) as a 140 years or older . In reality, this will not meet the intended mule deer objectives. As such we will assume that over time at least 1/2 of the mule deer objective will be met from the excluded forest. As such, for the purposes of estimating timber supply implications, we will assume at least 574.2 hectares of THLB will be maintained as 140 years or older - which equates to an implied rotation of 230 years. **As the average harvest age of 100 years for the PG TSA in the TSRII Analysis Report, this objective has an effective impact on the THLB of 57% or 837.6 hectares.**

Calculations detailing above statement:
2 296.7 ha total area, 1 469.5 ha THLB, and 827.2 ha is excluded forest
2 296.7 ha * .50 = 1 148.4 ha must be 140 years or older
1 148.4 ha / 2 = 574.2 ha of THLB must be 140 years or older
574.2 ha / 1 469.5 * 100 = 39% of the THLB must be 140 years or older
100% / (100% - 39%) * 140 years = 230 year implied rotation
100 - ((100 years / 230 years) * 100) = 57% effective impact
1 469.5 ha * 0.57 = 837.6 ha

The desire is to maintain between 10 to 40% of the area with shrub cover:

- ≤ 40% < 40 years:

This means up to 918.7 hectares, of the 1 469.5 hectares of THLB can be younger than 40 years at any point in time - which can be achieved with an implied rotation of 63 years or longer. **As the average harvest age of 100 years for the PG TSA in the TSRII Analysis Report, this objective has no THLB or harvest forecast implications.**

Calculations detailing above statement:
2 296.7 ha total area, 1 469.5 ha THLB, and 827.2 ha is excluded forest
2 296.7 ha * .40 = 918.7 ha can be 40 years or younger
918.7 ha / 1 469.5 * 100 = 63% of the THLB can be 40 years or younger
(100% / 63%) * 40 years = 63 year implied rotation

- $\geq$ 10% < 40 years:

This means up to 229.7 hectares, of the 1 469.5 hectares of THLB must be younger than 40 years at any point in time - which can be achieved with an implied rotation of 250 years or less. **As the average harvest age of 100 years for the PG TSA in the TSRII Analysis Report, this objective should be rather easy to obtain as long as at least 40% of the harvested young stands provide adequate shrub cover. There may be a minimal unquantified effective THLB reduction and harvest forecast reduction as a result of some lost productivity from the shrub and brush competition. Otherwise, this objective has no THLB implications.**

Calculations detailing above statement:
2 296.7 ha total area, 1 469.5 ha THLB, and 827.2 ha is excluded forest
2 296.7 ha * .10 = 229.7 ha must be 40 years or younger
229.7 ha / 1 469.5 * 100 = 16% of the THLB can be 40 years or younger
(100% / 16%) * 40 years = 250 year implied rotation

MANAGEMENT OBJECTIVES FOR GROUP 3:

No harvesting is permitted with in this area. Thus, the resulting reduction to the THLB of 101.8 hectares.

MANAGEMENT OBJECTIVES FOR GROUP 4:

None of this area is incorporated into the Type I proposed mule deer ungulate winter range.

OVERALL MANAGEMENT OBJECTIVES:

The objective to maintain irregularly shaped harvest openings less than 1 hectare in size and less than 250 metres wide could result in operational considerations that would result in further implications to the THLB.
The objective to encourage partial harvest systems could result in operational considerations that would result in further implications to the THLB.

I have assumed:

the objective of maintaining Douglas-fir can be addressed within the mule deer objectives;

the seasonal limitation to harvest does not result in exclusion of THLB;

forest health issues can be addressed within the mule deer objectives;

access management will not result in operational considerations that would result in further implications to the THLB; and

- restricting new road development within UWR units 5 and 6 will not result in defacto no harvest areas.

IN SUMMARY:

Group 1 objectives reduce the THLB by 1 149.6 hectares.

Group 2 objectives reduce the THLB by 837.6 hectares**.**

Group 3 objectives reduce the THLB by 101.8 hectares.

In total, the impact to the Prince George Forest District THLB is estimated to be 2 089.0 hectares. The impact for the Prince George Forest District falls well within the 3 034 hectares of THLB quota for establishing Type I ungulate areas. Please note the THLB impact noted in this assessment is not directly comparable to the permitted THLB TSRII budget.

The objective to maintain irregularly shaped harvest openings less than 1 hectare in size and less than 250 metres wide could result in operational considerations that would result in further implications to the THLB.
The objective to encourage partial harvest systems could result in operational considerations that would result in further implications to the THLB.

The inserted table provides details from which the summary areas noted above were derived:

mdeer_dpg
UMMARY.xls (23 KB

The area summaries associated with the groupings in this inserted table do not compare to the Priority 1, 2 and CCLUP area summaries noted in Appendix 4.

Yours truly,

Doug Beckett
Regional Timber Supply Analyst
Ministry of Forests, Northern Interior Forest Region

In response to the area shortfall identified by Mr. Beckett, additional area was raised from draft inventory to meet target objectives. The methodology supplied by Mr. Beckett was applied to ensure targets are not exceeded.

Appendix 3 - BEC Classification for Seral Target Application

This table indicates Biogeoclimatic classifications assigned to “deep snowpack zone” and “very deep snowpack zone”. This assignment is used to assign UWR areas to either Desired Habitat Condition 1) for “deep snowpack zone” or to Desired Habitat Condition 2) for “very deep snowpack zone”.

Deep Snowpack Zone:

SBSdw2, SBSdw3, SBSmh, SBSdh (following Establishing Ungulate Winter Range Objectives- Omineca Region by Triton Environmental Consultants, October 25, 2002)
SBSdw1 (not addressed in Triton report)

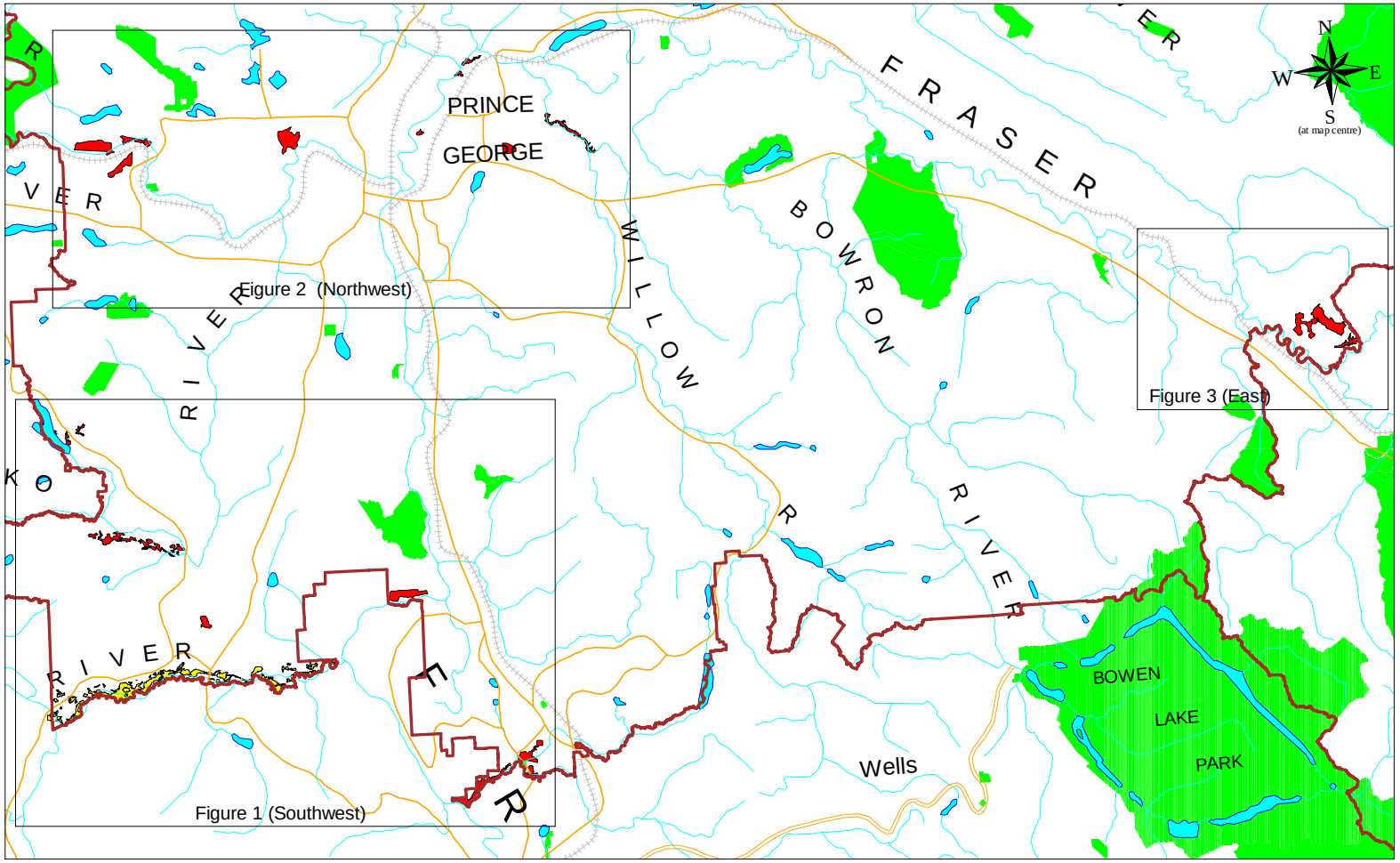
Very Deep Snowpack Zone

SBSwk1, SBSwk3, SBSmk1, ICHvk2 (following Establishing Ungulate Winter Range Objectives- Omineca Region by Triton Environmental Consultants, October 25, 2002)
SBSmw, SBSmv1, Ichwk3, ICHwk1 (not addressed in Triton report)

Appendix 4 – Maps of P.G. Mule Deer Ungulate Winter Range

- Map 1 – Prince George Forest District Mule Deer UWR
- Figure 1 – P.G. Mule Deer UWR – (Southwest)
- Figure 2 – P.G. Mule Deer UWR – (Northwest)
- Figure 3 – P.G. Mule Deer UWR – (East)

Map 1 - Prince George Forest District Mule Deer UWR



FOR, Ministry of Forest Districts
- Outlined, 1:20K
- Forest District

SRMB, Water - Lines, 1:2M
- River/Stream - Definite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Lake - Definite
- Island - Definite
- Coastline - Definite

Parks, Parks and Protected Areas - Colour Filled, 1:20K
- Protected Area - Provincial

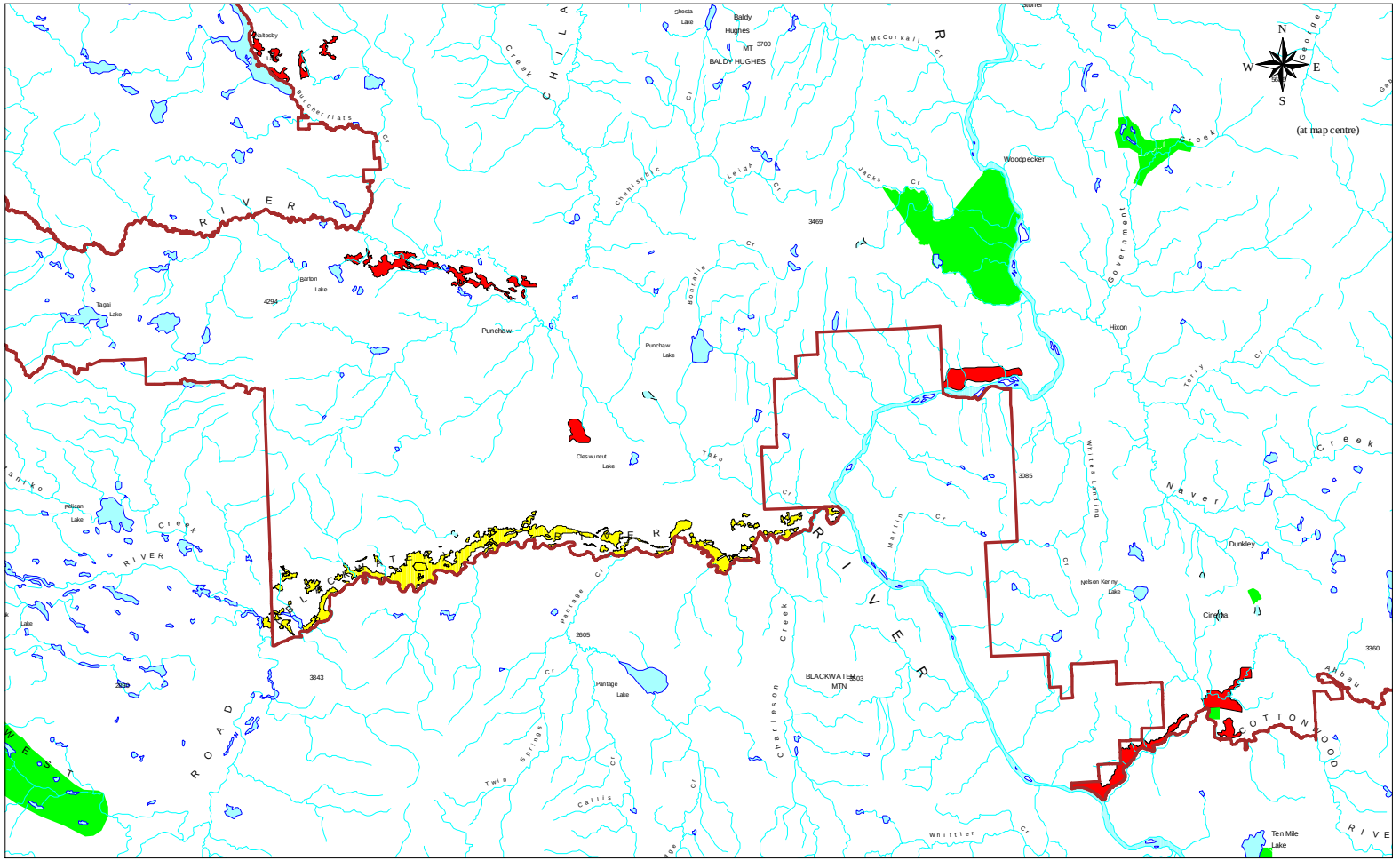
P.G. Mule Deer UWR (U-7-013)
- CCLUP Approved UWR
- Prince George Mule Deer UWR

1:600,000

10 0 10 Kilometers

Ministry of Water,
Land and Air Protection
Omineca Region
September 16, 2003

Figure 1 - P.G. Mule Deer UWR (Southwest)



FOR, Ministry of Forest Districts
- Outlined, 1:20K
- Forest District

NTS, Water - Lines, 1:250K
- River/Stream - Definite
- River/Stream - Disappearing
- River/Stream - Indefinite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Flooded Land - Inundated
- Lake - Definite
- Lake - Indefinite
- Lake - Intermittent
- Lake - Marshy
- Flooded Land - Inundated.Indefinite
- Lake - Marshy.Indefinite
- Island - Definite

Parks, Parks and Protected Areas - Colour Filled, 1:20K
- Protected Area - Provincial

P.G. Mule Deer UWR (U-7-013)
- CCLUP Approved UWR
- Prince George Mule Deer UWR

1:300,000

5 0 5 Kilometers

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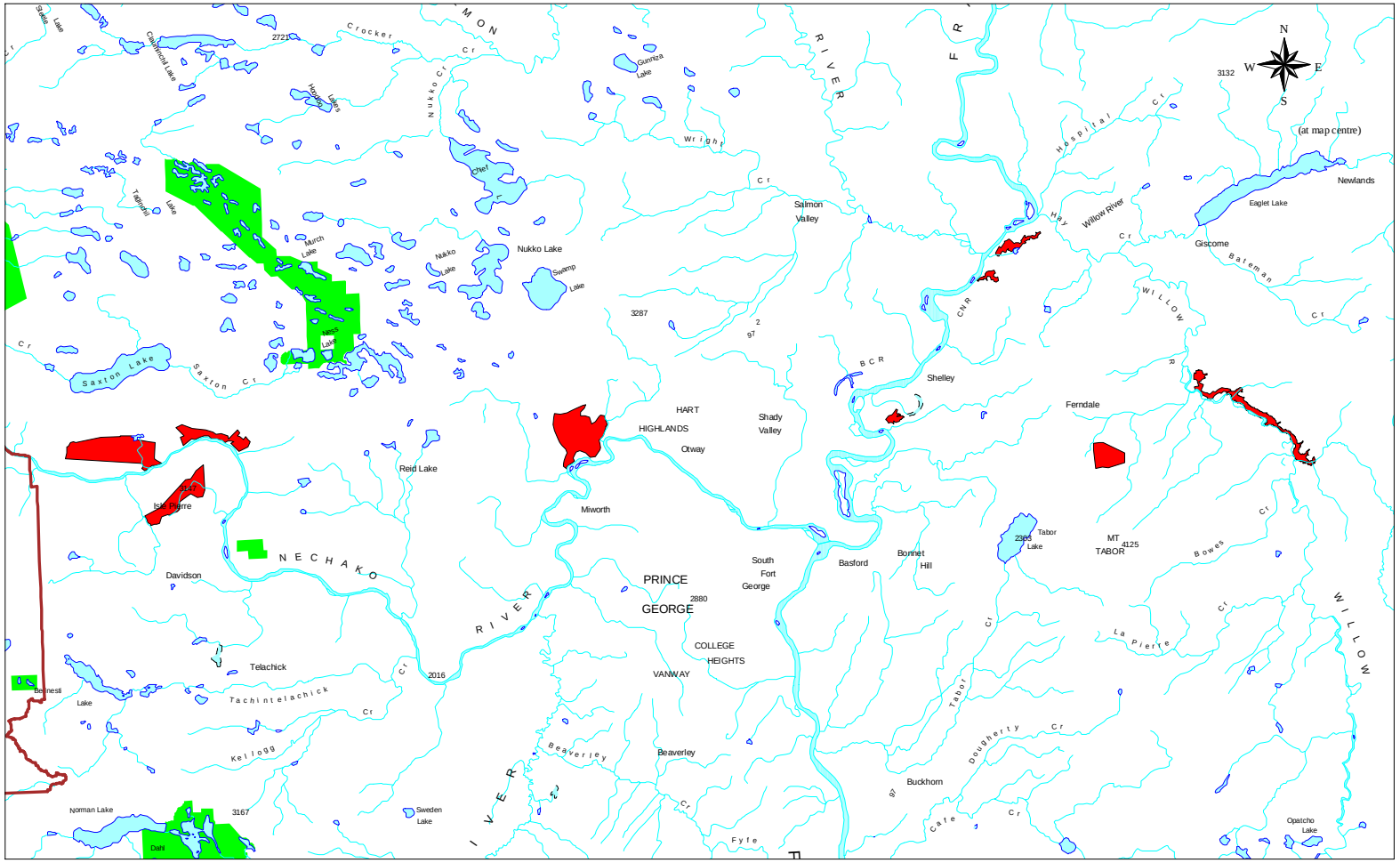
Omineca Region
September 16, 2003

Figure 2 - P.G. Mule Deer UWR (Northwest)



FOR, Ministry of Forest Districts
- Outlined, 1:20K
- Forest District

NTS, Water - Lines, 1:250K
- River/Stream - Definite
- River/Stream - Disappearing
- River/Stream - Indefinite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Flooded Land - Inundated
- Lake - Definite
- Lake - Indefinite
- Lake - Intermittent
- Lake - Marshy
- Flooded Land - Inundated.Indefinite
- Lake - Marshy.Indefinite
- Island - Definite

Parks, Parks and Protected Areas - Colour Filled, 1:20K
- Protected Area - Provincial

P.G. Mule Deer UWR (U-7-013)
- CCLUP Approved UWR
- Prince George Mule Deer UWR

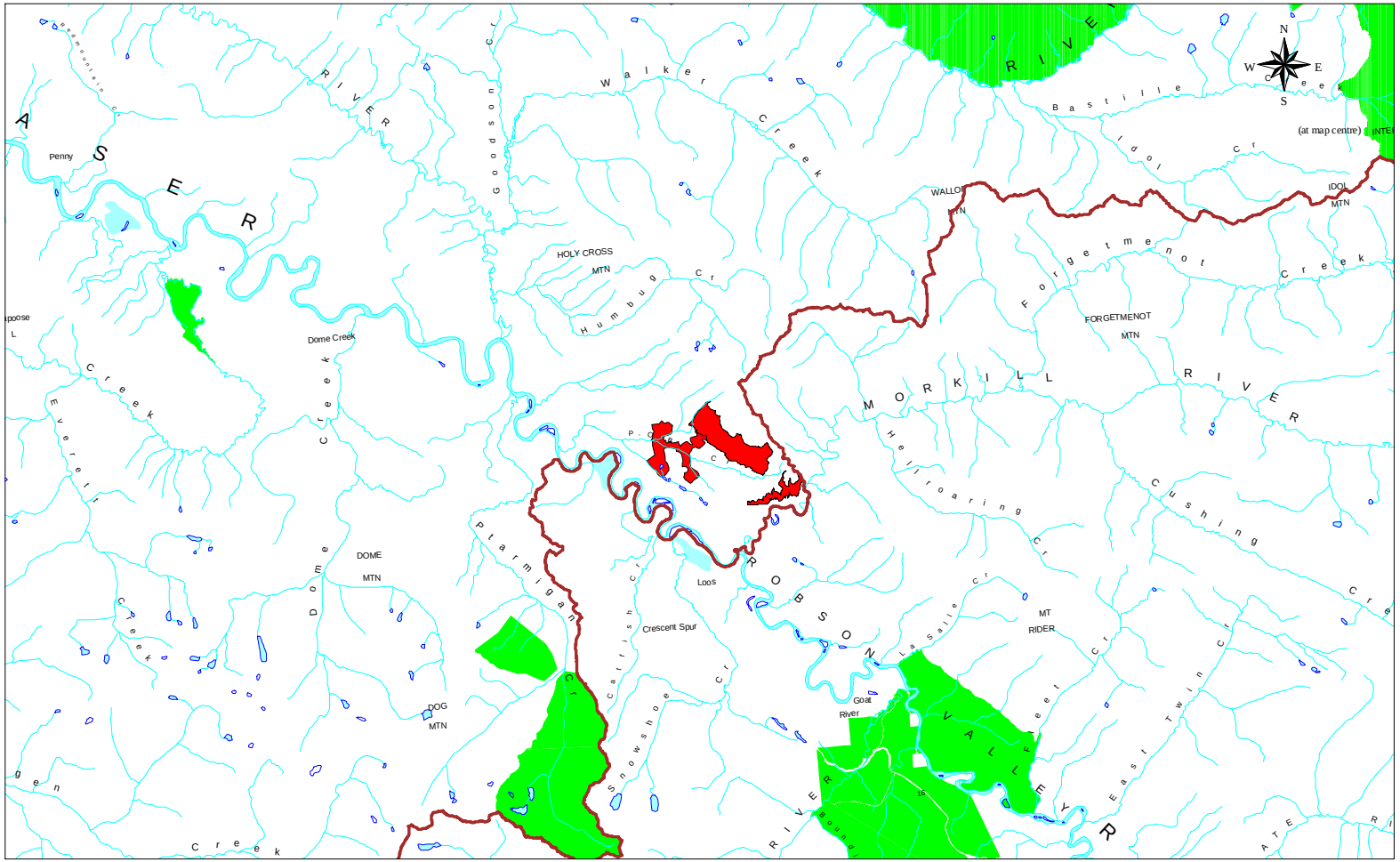
1:250,000

5 0 5 Kilometers

Ministry of Water, Land and Air Protection
Omineca Region
September 16, 2003

BRITISH COLUMBIA

Figure 3 - P.G. Mule Deer UWR (East)



FOR, Ministry of Forest Districts
- Outlined, 1:20K
- Forest District

NTS, Water - Lines, 1:250K
- River/Stream - Definite
- River/Stream - Disappearing
- River/Stream - Indefinite
- River/Stream - Left Bank
- River/Stream - Right Bank
- Dam
- Flooded Land - Inundated
- Lake - Definite
- Lake - Indefinite
- Lake - Intermittent
- Lake - Marshy
- Flooded Land - Inundated.Indefinite
- Lake - Marshy.Indefinite
- Island - Definite

Parks, Parks and Protected Areas - Colour Filled, 1:20K
- Protected Area - Provincial

P.G. Mule Deer UWR (U-7-013)
- CCLUP Approved UWR
- Prince George Mule Deer UWR

1:250,000

5 0 5 Kilometers

Ministry of Water, Land and Air Protection
Omineca Region
September 16, 2003