

Brewster Mountain Goat Ungulate Winter Range (UWR) (U-7-004) Report

**Mackenzie Forest District
Omineca Region**

Prepared By:

W. R. (Bill) Arthur
Senior Ecosystem Specialist
Omineca Region
Environmental Stewardship Division
Ministry of Water, Land and Air Protection

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1.0 Background

The Mt. Brewster mountain range in the Nabesche River drainage, north side of Peace Arm of Williston Reservoir, contains critical year-round habitat for a significant mountain goat population that inhabits this area. The Peace Arm area currently supports a resident population of approximately 60-100 mountain goats (Wood 2002).

2.0 Site Description

This Ungulate Winter Range (UWR) includes the forested rocky bluffs and alpine areas of the southern portion of Mt. Brewster between 1200 and 1900 metres in elevation (Map 1, appendix 2). The UWR area include the AT un, ESSFmvp4, ESSFmv4, BWBSmw1 and BWBSmw2 biogeoclimatic zones.

The Natural Disturbance Type (NDT) for these Biogeoclimatic zones are:

Biogeoclimatic Zone	Natural Disturbance Type (NDT)
ESSFmv4 (moist very cold – Graham)	NDT 2
BWBSmw1 (moist warm – Peace) BWBSwk2 (wet cool – Graham)	NDT 3
AT un (Alpine Tundra) ESSFmvp4 (wet very cold parkland - Graham)	NDT 5

Snow depths are low to moderate: measurement taken in the winter of 1990 showed 53 cm at 740 meters elevation (Martin, 1994).

3.0 General Assessment Methodology

A number of aerial ungulate survey have been conducted which has confirmed mountain goat winter use of this area. A summer goat inventory conducted in July 1998 found 47 mountain goats on Mt. Brewster with an additional 13 in the Dark Horse Creek drainage to the northwest (Wood 2002).

4.0 Species Account Information – Mountain Goat

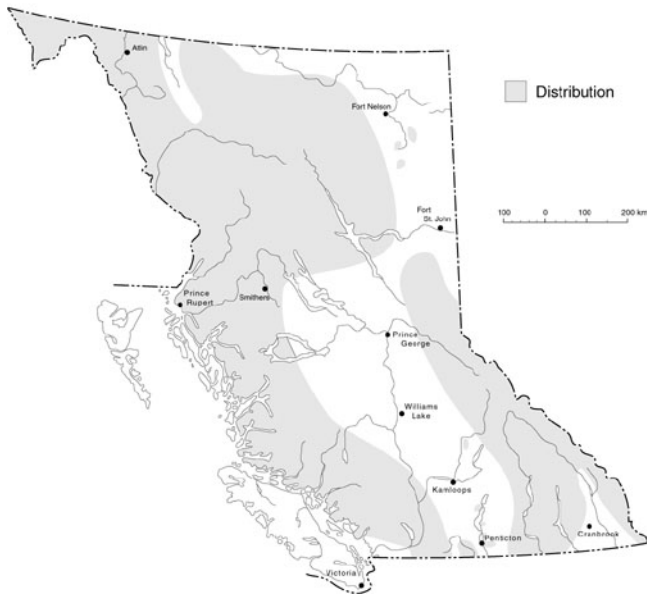
Scientific Name: *Oreamnos americanus*
Species Code: M_ORAM
Status: Yellow-listed (any indigenous species or subspecies (taxa) which is not at risk in British Columbia). Mountain goats are considered

to be REGIONALLY IMPORTANT because they require older age class forests for winter cover.

Ecology - Mountain goats are usually found in the most rugged mountainous areas of steep cliffs and rock bluffs, narrow ledges, rocky canyons, talus and rock slopes. They are considered non-migratory although there is often a vertical movement from high elevation summer ranges to lower elevations during winter. Suitable feeding areas border rough, steep escape terrain. Goats rarely move more than 400 m from this terrain except to visit mineral licks. In summer, diet consists of alpine and sub-alpine grasses, sedges, rushes and forbs. In winter, the grass/forb component of their diet is supplemented or even replaced by a variety of shrubs as well as conifers such as Douglas-fir, alpine fir, several pine species or juniper. Mosses and lichens are important for coastal populations in winter but are less important for interior populations. Natural mineral licks provide calcium, manganese, phosphorous and sodium, particularly during the spring and early summer. Mountain goats are considered moderately gregarious. In summer, females and kids may congregate in groups of 20-30. Adult males remain alone or gather together in small, loose aggregations. Breeding occurs in November and females give birth to their young in approximately 7 months. Ideally, kidding occurs on protected ledges in steep, rocky escape terrain with food and water near-by. Mountain goats are not territorial. Home ranges vary, depending on the degree of seasonal movement (tagged goats in Olympic National Park, USA are known to have made seasonal movements of up to 16 km).

Provincial Range - Mountain goats occur throughout much of the Rocky Mountains from the 49th parallel to the Yukon border, the Cassiar Mountains in north-central British Columbia, the Cariboo Mountains of the upper Fraser River system, the Purcell, Selkirk and Monashee Mountains of south-east British Columbia and the Coast Mountains from the lower Fraser River to the extreme northwest portion of the province.

Mountain goat
(*Oreamnos americanus*)



Winter Habitat - Mountain goats generally avoid snow depths greater than 50 cm. In deep snow areas, they may have to winter in areas with 100 cm or more. In the interior mountains, many goats move from the alpine and sub-alpine meadows down to the upper areas of timber on steep south- and west-facing slopes, gaining protection from the severest winter conditions. Others seek high-elevation wind-blown ridges where forage is exposed or covered by little snow.

Critical habitats and habitat features - Habitat preferences are tied to escape terrain: steep, rocky bluffs and cliffs. These areas can only produce limited forage, thus, undisturbed forage sites adjacent to the escape terrain are critical. Many wintering goats find forage and thermal cover within open, old growth or mature forests.

Thermal Cover - The overriding factor influencing mountain goat habitat suitability is the presence of adequate escape terrain. Although some terrain features such as forested bluffs and timbered areas adjacent to avalanche chutes are used during winter, overall, the extent to which mountain goats use forested areas specifically for thermal cover varies with regional climate and mountain goat ecotype (Hebert and Turnbull 1977). Both coastal and interior ecotypes will use lower elevations to escape heavy snows and cold temperatures but interior populations may also move upslope to wind swept ridges to find exposed herbs and grasses if the snow is dry enough (Hebert and Turnbull 1977, Fox and Smith 1988). Smith (1986) suggests that 50% of winter foraging occurs in commercial old growth forests in southeastern Alaska primarily because of their snow interception characteristics. However, these areas are only used if adjacent to escape terrain (Foster and Rahe 1985 and Fox and Smith 1988). Recent GPS studies in the Robson Valley found mountain goats used forested areas infrequently, and when they did were primarily steep and inoperable forest types (Poole and Heard 1999).

Although mountain goats have minimal direct conflict with forest harvesting activities, maintaining forested corridors between alpine areas is important to avoid isolation of sub-populations. Therefore, minimizing fragmentation and maintaining landscape-level connectivity during land use management planning is recommended.

Other regions in B.C. have chosen to provide guidelines on forest harvesting activities (Table 1). If some mountain goat winter ranges are found to include operable timber in close proximity to escape terrain, providing a forest cover objective may be warranted.

Table 1 – Summary of UWR Objectives for Mountain Goat from other Regions in BC.

Area	Objective
Okanagan-Shuswap UWR	Avoid logging activities within 500 m of winter range.
Kootenay Boundary Land Use Plan	70% basal area retention within a 100 to 200 metre strip on either side of the avalanche track comprised of 120 year old trees with an average crown closure of 60%.
Okanagan-Shuswap UWR	Selection systems - retain 50% preharvest basal area. Clearcut – openings must be < 5 ha and < 200 m in one dimension Max. 33% of forested area < 33 years old.

Winter Forage - Winter diets include conifers such as subalpine fir, mosses (such as *Hylocomium* spp., *Rhytidiadelphus* spp.), lichens (especially *Lobaria* sp.), and forbs (goldthread, bunchberry, trailing bramble) (Province of BC 1999; Fox and Smith 1988).

Access Management and Human Disturbance - Although mountain goats use alpine and subalpine habitats extensively (i.e., grassy alpine slopes, cliffs, avalanche chutes) forest harvesting and mining activities provide access into remote areas, which increases the risks to local populations through increased legal and illegal hunting pressures. Mountain goats are also vulnerable to helicopter activity used for mineral exploration and development, commercial backcountry recreation (e.g., heli-skiing) and wildlife surveys. The potential impact helicopters and other human disturbances (aircraft, blasting) have on mountain ungulates will vary with the timing (season), frequency and duration of disturbance. Although some ungulate species may show a greater degree of habituation and tolerance to human activity, mountain goats appear more susceptible to human disturbances than other species (Foster and Rahe 1983, Cote 1996, extensive review in Wilson and Shackleton 2001).

5.0 Land Designation

This UWR is located within the Mackenzie Timber Supply Area and is within the operating area of Slocan Forest Products Ltd. Abitibi Consolidated Company of Canada retains tenured cutblocks and roads within in Peace Arm area.

There are no Wood Lot Tenures or Tree Farm Licences within the UWR area.

6.0 Mackenzie Land and Resource Management Plan LRMP – Resource Direction

This UWR is located within the and Zone #26 Schooler - General Resource Management Zone and Zone #24 Nabesche – General Resource Management Zone, of the Mackenzie Land and Resource Management Plan.

Zone #26 Schooler – General Resource Management Zone – The intent of this zone is to manage for a wide array of extractive and non-extractive uses and values where emphasis may shift from time to time in specific areas to maintain opportunities for timber, mineral and oil and gas development balanced against other values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation. With specific management objectives to:

Objective - Manage wildlife populations at sustainable levels to meet both consumptive and non-consumptive use levels, consistent with the management direction of each RMZ.

Within a “General” RMZ the LRMP as identified that connectivity of important habitats, **must be** designed at the landscape level to ensure that there is no impact to timber supply during the term of that plan.

With the seral stage retentions targets:

Seral stage retention targets for mature and old forests by biogeoclimatic variant subzone within each natural disturbance type is to be achieved within the RMZ as detailed in the following table.			
Natural Disturbance Type (NDT)	Biogeoclimatic Zone	Mature and Old Forest (%)	Old Forest (%)
NDT 1	ESSF	>36	>19
NDT 2	SBS	>31	>9
	ESSF & SWB	>28	>9
NDT 3	SBS & BWBSa	>23	>11
	ESSF	>23	>14

Plan patch size distribution to emulate natural disturbance patterns as detailed in the following table.			
Patch Size Distribution			
Natural Disturbance Type (NDT)	<40 ha	40 – 80 ha	80 – 250 ha *
NDT 1	30-40	30-40	20-40
NDT 2	30-40	30-40	20-40
Natural Disturbance Type (NDT)	<40 ha	40 – 250 ha	250 – 1000 ha *
NDT 3	10 – 20	10 – 20	60 - 80

* or larger if required for caribou management, forest health or if natural disturbance pattern dictates.

Zone #25 Nabesche – General Resource Management Zone (RMZ) - The intent of this zone is to manage for a wide array of extractive and non-extractive uses and values where

emphasis may shift from time to time in specific areas to maintain opportunities for timber, mineral and oil and gas development balanced against other values such as wildlife and wildlife habitat, fish and fish habitat, heritage and culture, scenic areas and recreation. With specific management objectives to:

Objective - Manage wildlife populations at sustainable levels to meet both consumptive and non-consumptive use levels, consistent with the management direction of each RMZ.

This zone has the same connectivity, seral stage retention targets and patch size objectives as Zone #26 Schooler RMZ (above).

7.0 Forestry Resource Impacts

There are no proposed or approved category A cut blocks within the proposed UWR area. The proposed area has a gross area of 1373.9 ha, of which 103.1 ha is within the Timber Harvesting Land Base (THLB). There is an Environmental Sensitive Area (ESA) impact budget of 4045 ha for the Mackenzie TSA. We are recommending no commercial forest harvesting (100% netdown) within this UWR, we will use 103.1 ha of that ESA budget.

Brewster Mountain Goat UWR Timber Impact Summary (ha)

Gross Area	THLB	% Net Down ¹	THLB Budget Used
1373.9	103.1	100	103.1

¹Base upon management objectives

8.0 Other Resource Impacts

This is a moderate geothermal potential east of Schooler Creek, the Mineral Title Map showed no active mineral tenures within this UWR. A data search (August 2002) show no known gas fields within the area of the UWR, the “Butler” field is located east of this area. There was historical placer activity in this area (Branham Flats between 1931 to 1940), which is now flooded by the Williston Reservoir. The designation of this UWR should not present any conflicts to this claim or other mineral development. There maybe conflicts with oil and gas exploration and development in this area.

9.0 Management Objectives - Desired Habitat Condition

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 may be amended from time to time,

Maintain mountain goat winter ranges to provide high suitability foraging opportunities (desired habitat attributes include: escape terrain, steep south and west-facing windswept ridges/slopes, conifer bluffs, shrub/grass communities), screening and snow interception cover. This will be accomplished by applying the following specific management objectives to the proposed UWRs:

Timber Harvesting

No commercial forest harvesting within this winter range.

Forest Health

Manage forest health to reduce conflicts between Mountain Goats and bark beetle management.

In the event of a bark beetle outbreak, limit harvesting to forest health sanitation control activities judged not to be a detrimental impact to Mountain Goat habitat by maintaining a mature forested buffer (200 m no harvest zone) adjacent to critical escape terrain or forested movement trails and licks.

Range Management

Within all UWR units

- Manage for Mountain Goat habitat to reduce conflicts between Mountain Goats and livestock
- Livestock use will not exceed more than 10% of current year's alpine and sup-alpine grasses, sedges, rushes, forbs and shrub growth.
- Avoid livestock use of critical escape terrain, including but not limited to, steep slopes, rocky bluffs and cliffs, undisturbed forage sites adjacent to escape terrain.
- New range development features such as but not limited to, waterholes, fences, salt blocks, corrals, access road and trails will not be developed within the UWR unit.
- To reduce disease transfer between wild goats and domestic sheep, do not allow domestic sheep within UWR unit for grazing or vegetation control.

Access Management

Maintain mountain goat winter range by minimizing human disturbance and access

Where reasonable alternatives exist, plan the location and design of major/secondary access routes to avoid this winter range.

Where road/trails are constructed within this winter range, re-claim or plant road/trails to limit access to critical escape terrain, forested movement trails and licks.

Appendix 1 - Summary of Consultation

Contact Name	Response / Comments
Romona Blackwell MRSM – Mineral Planner Omineca-Peace Region	<ul style="list-style-type: none"> • Designation of this UWR would not conflict with mineral tenure development
Dan Boulianne – Senior Planning Forester Abitibi Consolidated	<ul style="list-style-type: none"> • Report sent for Review and comment (Feb. 7/03) • E-mail to Dan Boulianne (March 14/03) requesting comments from Abitibi. • Received a e-mail from James Rockwood – Planning Forester (March 17/03) advising me they review the proposal and would be responding soon. • Received a e-mail from Dan Boulianne (March 23/03) indicating the this UWR was now not in their operating area and had sent the report to Slocan for comments. • No further response from Abitibi expected.
Lars Hulstein – Slocan Mackenzie Operations	<ul style="list-style-type: none"> • Received the report (March 24/03) from Dan Boulianne due to changes in re-alignment of operating areas between Slocan and Abitibi. • Phone Lars on April 2/03, he has received the reports and will comment soon. • Received detailed comments on Brewster Mountain Goat UWR on April 11, 2003. <p>- Would like to see a adaptive management feedback loop to insure the UWR area and objectives get updated as our understanding and information improves.</p> <p>- Limited support for the UWR. Recommend using the current “Ospika” goat project procedures for this area, and management via that approach.</p>
Bill Warner – Manager BC Timber Sales Office Prince George	<ul style="list-style-type: none"> • Report sent for Review and comment (Feb. 7/03) • Jim Reid – BC Timber Sales, e-mail response (March 26/03), where he does not see any real issues with this UWR and only limited conflicts with forestry.
Dave Francis – District Manager Mackenzie Forest District	<ul style="list-style-type: none"> • Report sent for Review and comment (Feb. 7/03) • E-mail to Bruce Armstrong (operations manager) March 14/03 requesting comments from the Mackenzie District. • Meet with Bruce Armstrong (March 31/03) requesting comments from Mackenzie District. • Phone call to Stefan Tack – Zone Officer (April 2/03) requesting comment on the UWR.

Contact Name	Response / Comments
	<ul style="list-style-type: none"> • E-mail sent to Bruce Armstrong on April 22, 2003, requesting comments, if no response back by April 28, 2003, we will assume there are no conflicts with the Peace Arm UWR. • Received an e-mail from Bruce Armstrong (April 22, 2003, the district didn't have any specific concerns with the proposal.
Chief Bernie Metecheah – Halfway River First Nation	<ul style="list-style-type: none"> • Report sent for Review and comment (Feb. 7/03) • Contacted the Halfway River First Nation office on April 2/03, we will have to resend the report due to change in the chief position. It is now Chief Joyce Morin. • FAX sent April 2/03 requesting confirmation of UWR areas are within traditional territory. • No response back. • May 15, 2003 a final letter was sent to Chief Joyce Morin requesting comments/input within two weeks, No response back.
Chief Johnny Pierre – Tsay Key Dene First Nation	<ul style="list-style-type: none"> • Report sent for Review and comment (Feb. 7/03) • Contact from Trever Toma – TKD Band Office (Feb 25/03) to setup a presentation to Chief and Council (April?) • 2 Messages left for Trever Toma to contact me. • FAX sent April 22, 2003 requesting confirmation of UWR areas are within traditional territory and for any comments • May 15, 2003 a final letter was sent to Chief Johnny Pierre requesting comments/input within two weeks, No response back. • Meeting June 5, 2003 with Robert and Trever Toma to review UWR for Northern Caribou and talk about the Peace Arm UWR's • June 18, 2003 received a phone call from Robert Toma, where they support the establishment of the three UWR along the Peace Arm

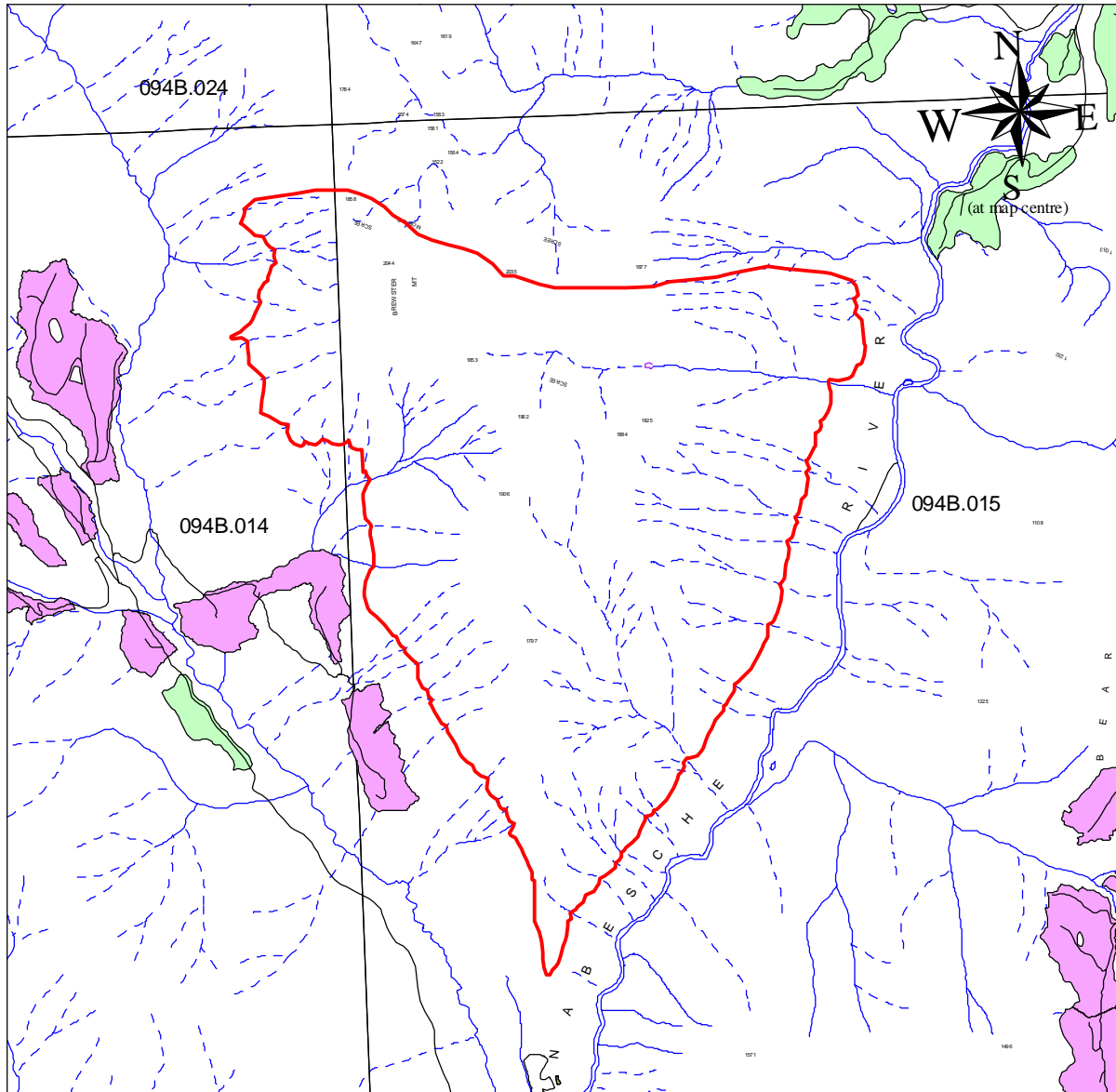
Appendix 2 – Literature Cited

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- Gilbert, B.A. and K.J. Raedeke. 1992. Winter habitat selection of mountain goats in the north Tolt and Mine Creek drainages of the north central Cascades. In Biennial Symposium of the Northern Wild Sheep and Goat Council, Cody, Wyoming. **eds.** J. Emmerich and W.G. Hepworth. Wyoming Game and Fish Department, Cody. **8**:305-324
- Hebert, D. M., and W. G. Turnbull. 1977. A description of southern interior and coastal mountain goat ecotypes in British Columbia. Pp. 126-146 *in*: W. Samuel and W. E. MacGregor (eds.). Proc. First Intl. Mtn. Goat Symp., Kalispell, Montana.
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- Wilson, S. and D.M. Shackleton. Backcountry Recreation and Mountain Goats: a proposed research and adaptive management plan.
- Wood, M.D. 2002. Summer inventory of mountain goats and Stone’s sheep in the Nabesche River drainage, north-eastern British Columbia, 1998. Peace/Williston Fish and Wildlife Compensation Program Report No. 265. 14pp plus appendices

Appendix 3 – Brewster Goat UWR Area Maps

- Map 1 – Trim Water (scale 1:50,000)
- Map 3 – Timber Harvesting Land Base Map (scale 1:50,000)

Map 1 - Brewster Goat UWR



1:50,000

500 0 500 Meters



- Brewster Goat UWR
- Brewster Goat UWR
- Nablesche Roads
- Nablesche Roads
- Nablesche Blocks.shp
- Approved Cat A
- Proposed Cat A
- Logged
- Logged - Recently

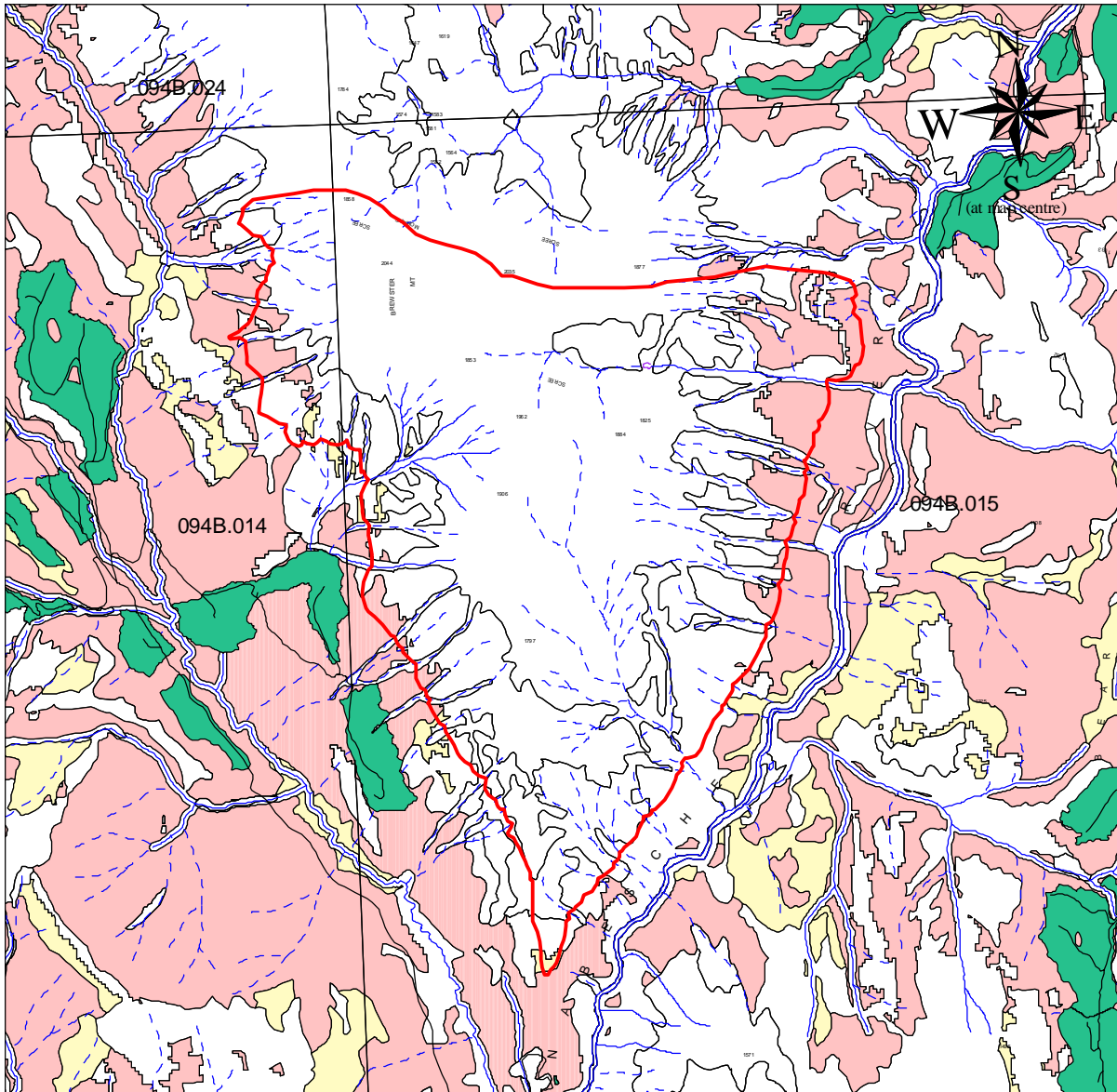
- Logged - SR <3m
- Free To Grow
- Infrastructure
- Road Landing
- ISB, 1:20,000 Scale Mapsheet Grid
- 1:20,000 (BCGS) Mapsheet Grid
- TRIM, Water - Lines, 1:20K
- River/Stream - Definite
- River/Stream - Indefinite

- River/Stream - Intermittent
- River/Stream - Left Bank
- River/Stream - Right Bank
- Lake - Definite
- Lake - Indefinite
- Lake - Intermittent
- Island - Definite

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Map 3 - Brewster Goat UWR



1:50,000

500 0 500 Meters



Brewster Goat UWR	—	River/Stream - Definite	Peace dmk thlb.shp
Brewster Goat UWR	- - -	River/Stream - Indefinite	Contributing
Nabesche Roads	- - -	River/Stream - Intermittent	Partially Contributing
— Nabesche Roads	—	River/Stream - Left Bank	Non Contributing
Nabesche Blocks.shp	—	River/Stream - Right Bank	Excluded
Nabesche Blocks.shp	—	Lake - Definite	
ISB, 1:20,000 Scale Mapsheet Grid	- - -	Lake - Indefinite	
1:20,000 (BCGS) Mapsheet Grid	- - -	Lake - Intermittent	
TRIM, Water - Lines, 1:20K	—	Island - Definite	

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