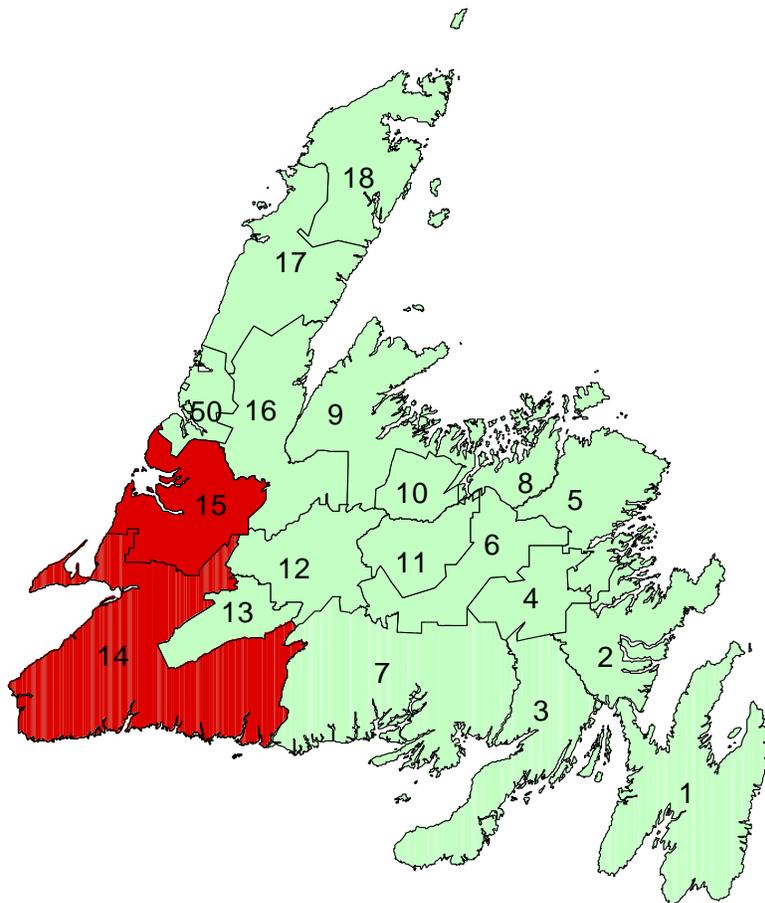




**Corner Brook Pulp and Paper Limited  
Five-Year Operating Plan  
Forest Management Districts 14 and 15  
Zone 6**

**January 1, 2014- December 31, 2018**



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## INTRODUCTION

The forest industry in Canada has evolved from the management of the timber resource to the management of the forest ecosystem. Previously, forest managers developed forest management plans in isolation, focusing on timber. But as the public began requesting the inclusion of other values, consultations with the public and other resource managers evolved simultaneously with the consideration of non-timber values. This has become a cornerstone of sustainable forest management.

Corner Brook Pulp and Paper Limited (CBPPL) has joined in this shift to sustainable forest management by incorporating social, environmental, and economics values in the sustainable development of Newfoundland's forests. The Department of Natural Resources and CBPPL have incorporated public consultations in the forest management planning process since the 1980's, developing a positive relationship among the government, CBPPL, and the community. Public involvement in the identification of values and the development of management plans benefits present as well as future generations.

This Five Year Operating Plan represents the second iteration for Zone 6 incorporating the new legislated planning requirements of the Newfoundland Forest Service. In the past, there were five major planning documents; Provincial Sustainable Forest Management Strategy, District Strategy Document, Five Year Operating Plan, Annual Operating Plan, and Annual Report. This new planning framework has eliminated the District Strategy Document, however, its former contents are now split between the Provincial Sustainable Forest Management Strategy and the Five Year Operating Plan. Sections that are Provincial in scope such as carbon, global warming and criteria and indicators are now included in the Provincial Sustainable Forest Management Strategy while sections that are more descriptive or depict local conditions such as values, forest characterization and ecosystem description are moved to the Five Year Operating Plan. Linkages between strategies from the Provincial Sustainable Forest Management Strategy and on the ground activities in the Five Year Operating Plan will be provided where applicable.

Another major change is the creation of eight planning zones on the island which are based loosely on ecoregion location. Districts that share common ecoregion characteristics are combined to form these zones. Districts 14 and 15 are combined to form Planning Zone 6. The requirement for submission to the Newfoundland Forest Service and for environmental assessment is one Five Year Operating Plan for each owner in each zone. The past requirement was one Five Year Operating Plan by each owner in each district. In this zone there will be two separate submissions by the Crown and Corner Brook Pulp and Paper Limited. Throughout this Five Year Plan, references will be made to Districts 14 and 15 individually but when combined they will collectively be referred to as Planning Zone 6 or the zone. The planning teams for this zone are located in St Georges and Corner Brook. Planning team format and structure will be discussed in a later section.

This document will try to fully integrate presentation of information and discussion for CBPPL timber limits in the zone, where possible. This will be done by combining statistics and other information from each district and reporting for the zone. However, tables and figures will be constructed such that information for individual districts will be available if a breakout is required. Discussion and information will be presented separately for each district where warranted based on unique and distinct differences in scope and content. The more descriptive sections of this plan will be generic in nature and give information for all ownerships in the zone as well as some broad comparative statistics. In this way the reader will get a better overview of the entire zone in the context of all ownerships and not just CBPPL limits.

Finally, this document will attempt to build on previous documents and on efforts of previous planning teams. Information will be updated as required or new sections will be added if any new information is available. Sections from previous documents will be included if they are still relevant, even if they were not discussed by the current planning team.

CBPPL wishes to illustrate to the public (the landowners) and to its customers that the forest is being managed on a sustainable basis. To this end, CBPPL has achieved certification to multiple internationally recognized environmental standards. The first environmental standard we received was ISO 14001. We were registered to this standard in 2001. It ensures that we have an environmental management system (EMS) in place which meets world-class standards and that we meet or exceed all legislation and all environmental guidelines or policies related to our operations. The second one we received was CAN/CSA-Z809 in 2003, Canada's national sustainable forest management (SFM) Standard. CAN/CSA-Z809 gives organizations a system for continually improving their forest management performance and engaging interested parties in a focused participation process. Rigorous and regular independent third-party audits are involved in certification to this Standard. Last but certainly not least, we received our FSC (Forest Stewardship Council) Boreal Standard designation in 2012. This is currently the most recognized international standard and arguably the most rigorous. Its mission is to promote environmentally-appropriate, socially-beneficial, and economically-viable management of the forest of Canada through standards and their application.

There will be more detail on CBPPL's Environmental Management System in Section 6 of this plan.

## **Section 1 Description of the Land Base**

### 1.1 General

#### 1.1.1 Location

Planning Zone Six encompasses Forest Management Districts 14 and 15 (Figure 1). It is located on the west and southwest coasts of the island and extends from Burgeo and Port aux Basques in the south to the southern boundary of Gros Morne National Park in the north. Major towns located within the zone are Deer Lake, Pasadena, Corner Brook, Stephenville, Port aux Basques and Burgeo. District 14 is administered from St. Georges with a depot in Burgeo while District 15 is administered from Corner Brook with a depot in Woody Point.

#### 1.1.2 History

The natural resources of the zone have played a major role in the well being of the residents. Since the earliest settlement, the forest and fish resources were the mainstay of the economy. Generally, settlement occurred around the coastal areas where the fishery was prevalent. Initially the forest was used as a source of fuelwood as well as construction materials for houses and fishery related items (stages, lobster pots, boats etc.). Sawmills developed to supply the local demand for lumber and construction timber.

The first major sawmill was constructed near Corner Brook stream in 1863 and at peak production employed 45 people. In the 1900's forestry became the employment mainstay in the region. From 1921 to 1947 sawmills were established in Bonne Bay which produced approximately 6 million fbm of lumber per annum.

In 1923 the construction of a pulp and paper mill in Corner Brook and a hydro generation station at Deer Lake commenced; both developments were completed in 1925. The mill was initially owned by the Newfoundland Power and Paper Company limited and operated until 1928. At that time it was taken over by the Canadian International Paper Company before giving way to

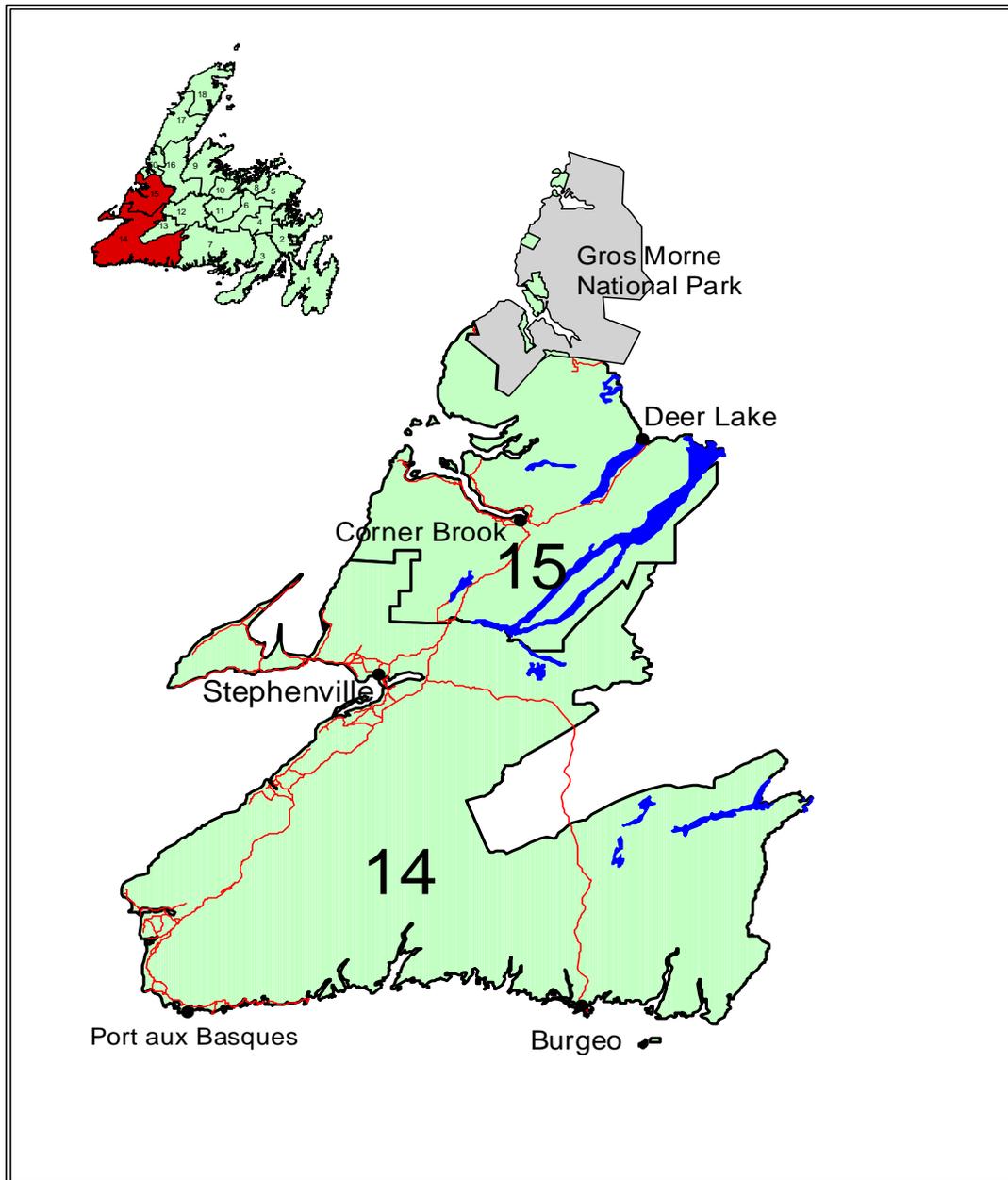


Figure 1 Location of Planning Zone 6

Bowaters in 1938. Bowaters operated the mill until 1985 when it was taken over by Kruger Inc., who operate the mill today. Woodlands employment peaked at 2000 employees and is still important to the local economy today employing fewer than 400 employees.

A linerboard mill was also established by the provincial government in Stephenville and opened in the early 1970's. The supply for this mill came from the Labrador Linerboard licenses in Districts 9, 14 and 16 and Goose Bay. This mill shut down in 1977 due to the uncertainty of supply and high cost of delivered timber from Labrador. The mill was purchased by Abitibi Price, converted to newsprint and reopened in 1981. Despite having the most modern and efficient paper making machine in Newfoundland and Labrador, the mill closed in the fall of 2005 in an attempt to bring the supply of newsprint more in line with the demand.

### 1.1.3 Ownership

There are two major tenure holders in the zone; crown and Corner Brook Pulp and Paper Limited (CBPPL) (Figure 2). Overall CBPPL, through timber licenses, accounts for 26 percent of the total land area in the zone with the crown controlling 74 percent. The majority of these licenses are due to expire in 2037. The productive forest breakdown for the zone is 53 percent for CBPPL and 47% for crown. In District 14, the crown controls 76 percent of the total land area and 63 percent of the productive forest. This is mainly due to the large area of unmapped crown land on the south coast. In District 15, CBPPL controls 63 percent of the total land area and 70 percent of the productive forest.

There is a timber transfer in District 15 from CBPPL to Crown at Governors Pond that is due to expire in 2017. This transfer provides pulpwood and sawlogs for the Bonne Bay sawmillers. Additional transfers at Kennedy Lake and Penguin Arm are also being pursued.

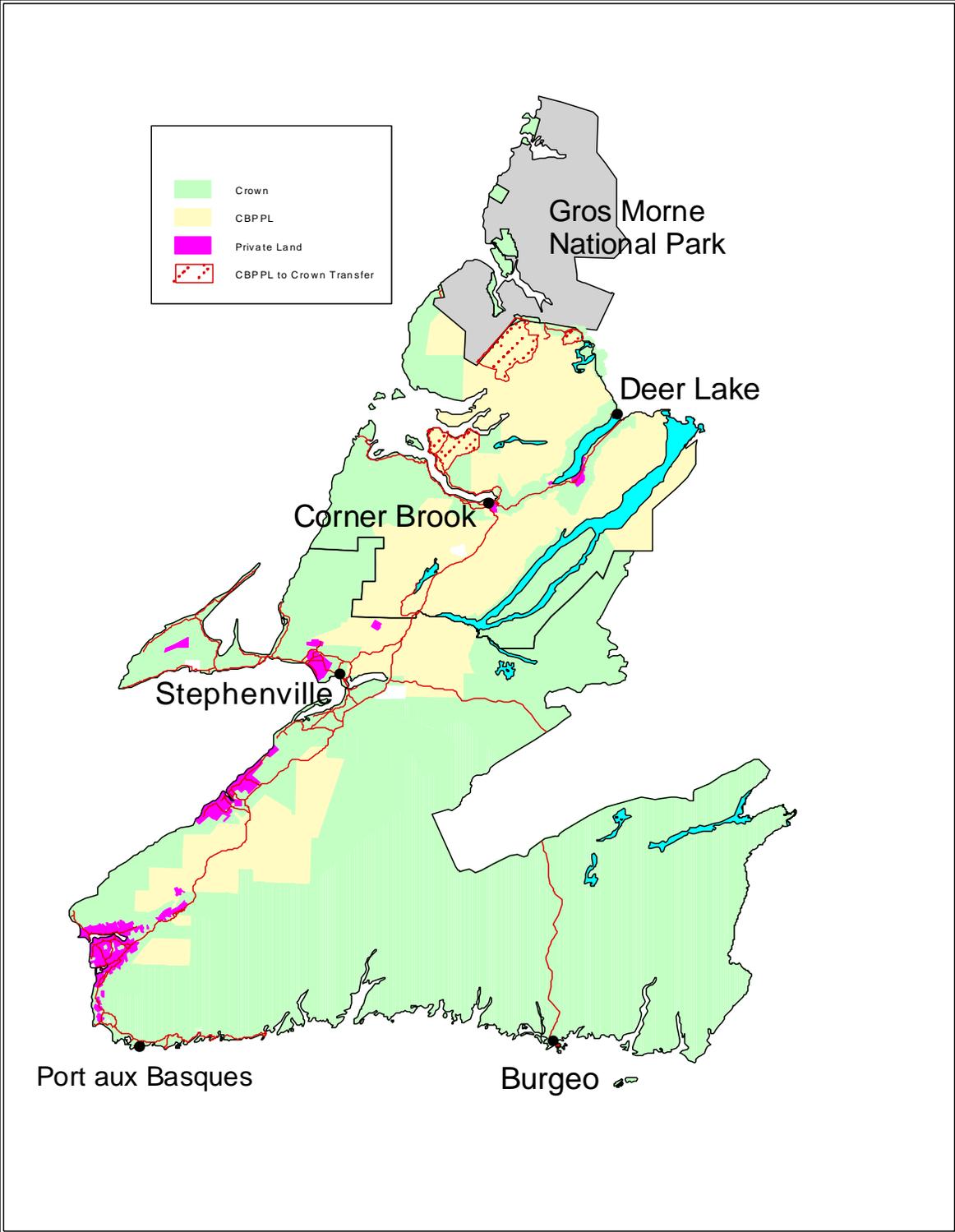


Figure 2. Ownership Map for Planning Zone 6

## 1.2 Physical

### 1.2.1 Topography and Hydrology

The topography of the zone is generally rugged however the flat, high upland plateaus provide contrast. Lowland areas occur along the coast and extend inland in the river valleys as well as in interior basins. The hilly upland areas make up a large portion of the zone and generally contain the most productive sites. They are dissected with very rugged topography and with ridges commonly in excess of 300 m in height. Another major land feature is the flat-topped, high uplands. These plateaus are dissected by wide valleys which flow to the lowlands. The lower slopes of the Long Range Mountains in the east flatten out towards the coast into extensive plateau bogs, sometimes covering up to 10 km<sup>2</sup>. The landscape is generally undulating and intersected by numerous ponds, lakes and streams. Forested land is naturally fragmented with bog, barren and ponds.

In the southwest, the lowland areas give rise to upland barren areas that are drained in an orderly fashion by major river valleys. Most of the South Coast is covered by gently rolling ground moraine, although areas of exposed bedrock are common. The unique hummocky terrain near Burgeo was formed by deposits of till from a retreating glacier. The interior of the southwest is a windswept, highland area with extensive barrens and elevations rising from 200m to more than 650m. Slope and basin bogs and fens are the dominant peatland.

The more prominent highland areas in the zone are Blow me Down Mountains, North Arm Hills, Mount Gregory, Lewis Hills, Annieopsquotch Mountains, and Cape Anguille Mountains.

Some of the major river basins in the zone are; Humber River, Harrys River, Serpentine River, Barachois Brook, Fishells River, Robinsons River, Crabbes River, Southwest Brook, Codroy River, Grey River, and White Bear River. With the exception of the latter two, these rivers originate in the highland areas and drain major watersheds before meandering through the fertile coastal lowlands.

### 1.2.2 Geology

The lowland portions of the zone are underlain by carboniferous deposits, mainly conglomerate, sandstone and shale. The age of these rocks is younger in the southern part of the zone at about 300 million years. The bedrock is mostly concealed by thick layers of glacial drift, outwash and delta deposits. The lowest elevations in the hilly uplands are underlain by Ordovician shales whereas the highest elevations are generally underlain by limestone, quartzite and, in the eastern portion, by Precambrian rocks such as gneiss and schist.

The Long Range Plateau, which runs north-south through the middle of District 15, is composed mainly of igneous and metamorphic rocks of which gneiss, granite and anorthosite are the most common. The Bay of Islands Range, which dominates the western side of District 15 and the

northwestern part of District 14, is underlain by serpentized dunite and periodotite, amphibolite and gabbroic rock. The serpentine rock type is particularly prevalent in the highest areas.

Three groups of rocks occur in the interior of District 14. The Notre Dame rocks are mostly sandstones, conglomerates, volcanic ash and lava that were created about 550 million years ago. Exploits rocks are volcanic ash and lava, sandstones, shales, and conglomerates formed about 500 million years ago. Gander zone rocks are sandstones, shales, and conglomerates formed about 550 million years ago. Some of these rocks have been metamorphosed into schist and gneiss. Large granite intrusions (areas where molten rocks seeped up) occur in the central and western portion and are about 450 million years old.

The southern areas of District 14 are mostly granites created by intrusions 300 to 400 million years ago. They form an almost unbroken band from Rose Blanche to Harbour Breton. Sandstones, shales and conglomerates, deposited about 500 to 550 million years ago, are found around Port aux Basques. These rocks belong to the dunnage zone and are also found farther east and north across the Burgeo highway and around Bay d'Espoir. Just east of La Poile Bay are ash and lava deposits that were created about 420 million years ago.

The entire zone has been severely glaciated and is mostly covered by glacial till. Extensive outwash deposits occur only in some of the major river valleys. "Plucking" of rock basins, now lakes, is noted and quarrying of the lee sides of some hills has been identified. Reorganization, and probably disorganization, of drainage is evident. Erratic boulders are found at the highest elevations however glacial debris is never found as a continuous blanket in the zone.

### **1.2.3 Soils**

Extending north and south from the Bay of Islands there are two significant alpine rock barren areas known as the Bay of Islands Serpentinized Range (North Arm Mountain and the Blomidon Range). These have a sparse but botanically interesting flora which has adapted to the magnesium and related natural soil toxicity problems. The soils are orthic and gleyed regosols with horizon development restricted by frost churning (Roberts, 1980). The areas are geologically important and attract people from all over the world for viewing (Roberts and Proctor, 1992.) They are also important hiking and winter recreation areas both from a local and national perspective.

The dominant soils of the forested uplands and slopes are orthic humo-ferric (brown soils containing mostly inorganic material that occur on relatively dry sites) and ferro-humic podzols (dark soils with a high organic content and a high amount of iron and aluminum), some of which are gleyed in the lower B horizon (Roberts, 1983). The presence of limestone and shale bedrock and tills derived from these calcareous substances and soil seepage (lateral movement of

moisture on slopes) are the most important factors for tree growth (Roberts, 1986, Meades and Roberts, 1992). The major site variables are landform, soils, drainage, moisture and fertility gradients, and understory vegetation. A prominent feature of this region is the presence of marl ponds, sometimes called living limestone ponds (Blue Ponds is a prime example). Significant soils in and around these ponds are orthic regosols and rego gleysols often with a mucky phase and very low trafficability.

The area adjacent to the Serpentinized Range west of Corner Brook includes many productive orthic ferro humic podzols derived from shale on long slopes. Forest growth is excellent on the well to moderately well drained, medium textured soils. However, erosion can be a problem if ground disturbance is moderate or worse.

The soils in the interior and southern part of District 14 are almost entirely humo ferric podzols. There are also some areas of exposed bedrock or bedrock with a thin soil covering (less than 10 cm).

#### **1.2.4 Climate**

The climate in this zone is one of the most favourable on the island with relatively warm summers and abundant precipitation. Conditions vary as a result of differences in topography and proximity to the coastline.

Annual precipitation is between 102 and 140 cm with the larger amounts associated with higher elevations. Annual snowfall is in the 317 to 508 cm range and often small patches of snow remain until late July in sheltered north facing valleys above 600 m.

Mean January temperature is -10 C and mean July temperature ranges from 16 C in valleys to 13 C in the highlands. The frost free period averages 110 days at the lower elevations and the growing season is between 130 to 160 days.

Severe windstorms have occasionally caused some blow down damage especially in shallow-rooted, over-mature stands. Periodic ice storms have also caused damage to predominantly hardwood stands.

There are significant local variations because of the many mountains and valleys. On mountain slopes and summits, winters are generally colder and the growing season is shorter than in the protected valleys. Mountain slopes also tend to receive more precipitation than low-lying valleys. The climate of the interior of District 14 is notable for its short growing season and permanent snow-cover throughout the winter. Snow covers about 60 percent of the landscape into late May which is about a month longer than in neighboring areas.

On the South Coast, the summers are colder due to the fog and prevailing onshore winds. This part of the zone also receives the most precipitation, mainly as rainfall.

## ***1.3 Ecosystems***

### **1.3.1 Forest Ecosystems**

An ecosystem is a community of interacting and interdependent plants, animals and microorganisms, together with the physical environment within which they exist (adapted from Perry, 1994). It is important to remember that within an ecosystem the interactions between the biotic and abiotic components are at least as important as the component themselves. Another critical characteristic of ecosystems is their overlapping boundaries. While each is definable in time and space, and distinguishable from adjacent ecosystems, each is intimately integrated with other local ecosystems. Additionally, each local ecosystem is nested within increasingly larger ecosystems. The scale at which an ecosystem is viewed is contingent on the species or abiotic characteristic under consideration. While planet Earth represents the ultimate global ecosystem, complex ecosystems also exist under fallen logs and rocks.

A forest ecosystem, as the term implies, is an ecosystem dominated by tree cover. At the coarsest level, the forests of Planning Zone 6, like all forests on the island, form part of the boreal forest ecosystem. The boreal forest is a green belt which spans much of the northern hemisphere. It stretches from the Atlantic shores of Scandinavia through Russia, across Alaska, through the mid latitudes of Canada until it reaches the Atlantic Ocean again in Newfoundland and Labrador. One of the distinguishing characteristics of the boreal forest is the phenomena of periodic, catastrophic stand replacement natural disturbances such as fire and insect outbreaks which typically give rise to uniform, even aged forests dominated by a few tree species.

The tree species which characterize the Canadian boreal forest include black spruce, white spruce, balsam fir, eastern larch, trembling aspen, white birch and jack pine. All of these, with the exception of jack pine, commonly occur on the Island. However, by far the dominant species are black spruce and balsam fir; together they represent more than 90 percent of the growing stock on the island. Spruce is most abundant in north central Newfoundland where a climate characterized by relatively dry, hot summers has historically favoured this fire-adapted species. In western and Northern Newfoundland the climate is somewhat moister and fires are far fewer in this region resulting in the ascendance of balsam fir, a species which is poorly adapted to fire.

### **1.3.2. Ecoregions and Subregions**

Damman 1979, defined ecoregions as areas where comparable vegetation and soil can be found on sites occupying similar topographic positions on the same parent material, provided that these sites have experienced a similar history of disturbance. Thus, an ecoregion cannot be defined in isolation from the physical landscape, but vegetation toposequence, vegetation structure, floristic composition, and floristic distributions can provide the primary criteria. According to Damman,

nine ecoregions are represented in Newfoundland. Each of these is further divided into subregions (also known as ecodistricts) All of the Newfoundland ecoregions and subregions contain many of the same ecosystem variables. It is the dominance and variance of these variables (e.g., vegetation and climate) that determine their classification.

Figure 3 depicts Planning Zone 6 relative to Damman's ecoregion classification system. The Western Newfoundland Forest Ecoregion encompasses the majority of the area in District 15 while the Long Range Barrens Ecoregion covers the largest percentage of area in District 14.

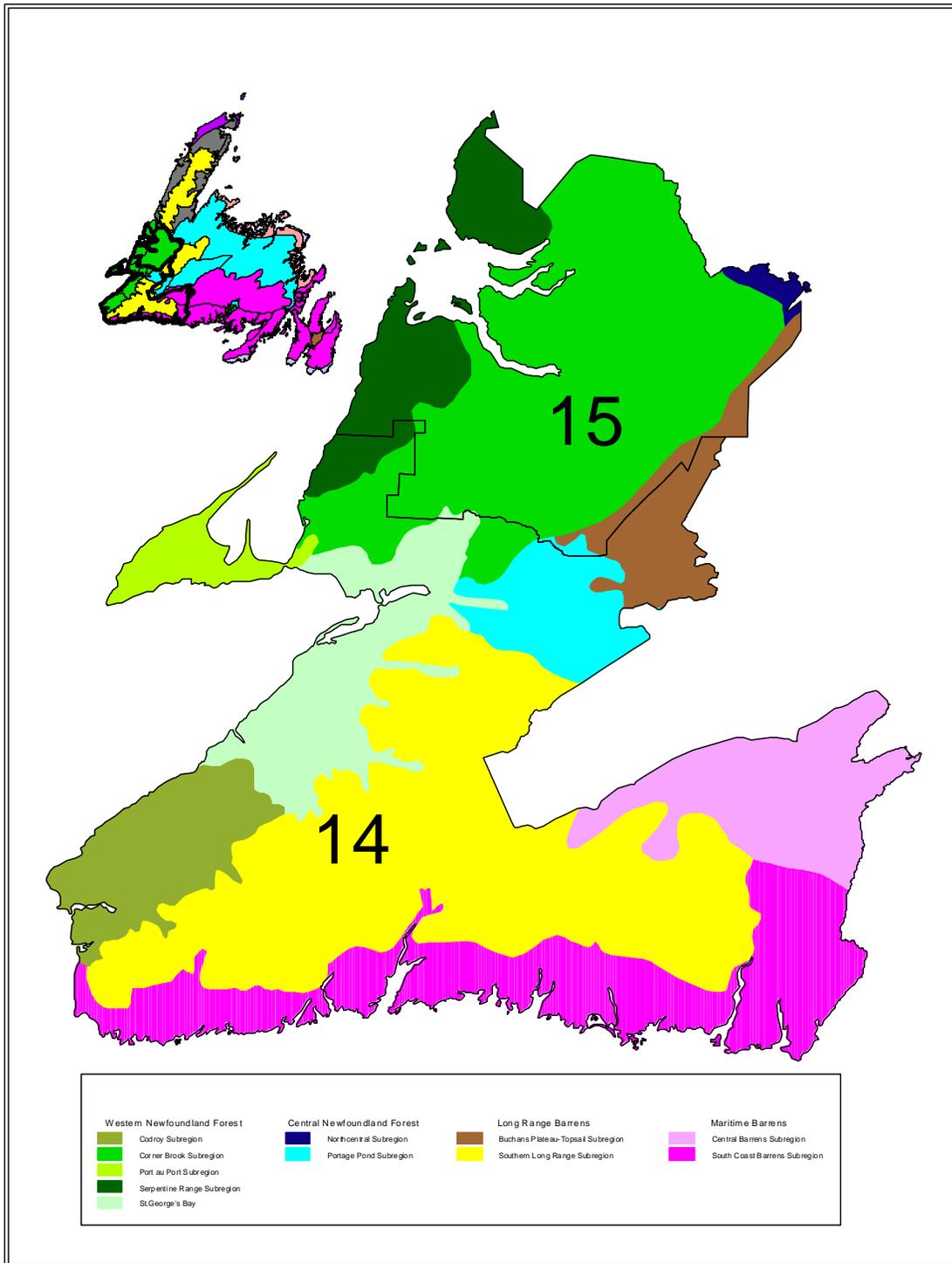


Figure 3 Ecoregions and subregions of Planning Zone 6.

This ecoregion along with the Maritime Barrens Ecoregion covers over 50 percent of the area in District 14 however the Corner Brook Ecoregion is more important in terms of forest productivity.

Table 1 depicts the percentage of the ecoregions and subregions that are represented in the zone. It describes each ecoregion and subregion as a percentage of the total in the province as well as the relative importance within each district and in both districts combined. For example, District 14 contains 100 percent of the Codroy Subregion of the Western Newfoundland Forest Ecoregion in the province. As well, 8 percent of the district and 6 percent of the zone is located within this subregion. The following is a detailed description from (Meades, 1990) of each ecoregion and subregion in both districts.

#### 1.3.2.1 Long Range Barrens Ecoregion

This ecoregion comprises the highlands extending from the southwest coast to the northern part of the Northern Peninsula. It consists of three distinct units, the Southern Long Range, the Buchan's Plateau-Topsails, and the Northern Long Range subregions. The subregions are separated by areas of more or less continuous forest with the former two occurring in the zone.

Fire is of little importance and has played no role in the formation of these barrens. There are large areas of exposed bedrock in this ecoregion which are acidic in nature.

Cool summers and cold winters are typical of this ecoregion. The mean daily temperatures are relative low therefore the vegetative season is short. Snowfall can exceed 5 m and drifting is extreme throughout the winter. Snow cover is permanent throughout the winter and persists through to late spring. Western and southwestern facing slopes are severely exposed due to the prevailing winds from this direction.

Table 1. Percentage of ecoregions and subregions in Planning Zone 6.

Name of Ecoregion and Subregion	Total Area in Province (ha)	Percentage of Total Area in Districts			Relative Percentage of Ecoregion and Subregion in Districts		
		14	15	Total	14	15	Combined
Long Range Barrens Buchans Plateau - Topsail Subregion	369811	15	7	22	4	5	4
Southern Long Range Subregion	599815	94	0	94	37	0	27
Western Newfoundland Forest							
Codroy Subregion	116278	100	0	100	8	0	6
Corner Brook Subregion	515637	11	82	93	4	75	23
Port au Port Subregion	41579	100	0	100	3	0	3
Serpentine Range Subregion	145132	13	67	80	1	18	6
St. Georges Bay Subregion	152185	99	1	100	10	<1	7
Central Newfoundland Forest							
Portage Pond Subregion	149319	55	2	57	5	<1	4
North central Subregion	2310742	0	<1	<1	0	<2	<1
Maritime Barrens							
Central Barrens Subregion	1514392	10	0	10	10	0	7
South Coast Barrens Subregion	894252	30	0	30	18	0	13

This ecoregion contains mainly barren vegetation with shallow ribbed fens and tuckamore dominating the landscape. Sheep laurel heath is the predominant dwarf shrub vegetation with pink crowberry dominated Empetrum heath covering exposed areas that are subject to active erosion. Arctic alpine vegetation ie (*Diapensia* and *Loiseleuria*) is common on all highlands and exposed sites. In areas with persistent snow cover, snow bank species such as moss heather, mountain sorrel and dwarf bilberry are common.

Extensive areas of tuckamore, mostly of black spruce less than one metre high, occur on slopes and in valleys, but are absent from hill summits. Speckled alder is completely absent being

replaced by sweet gale along brooks. Mountain alder is common on wet and dry sites but does not form alder swamps. Shallow peatlands, patterned fens and slope bogs cover extensive areas.

#### 1.3.2.1.1 Buchans Plateau - Topsail Subregion

The Buchan's Plateau-Topsails Subregion lies between Grand Lake and Red Indian Lake and its western edge extends into District 15. Most of the subregion is barren. Dwarf shrub heaths, shallow patterned peatlands, and areas with low krummholtz dominate the landscape.

#### 1.3.2.1.2 Southern Long Range Subregion

The Southern Long Range Subregion encompasses most of the center of District 14 and covers the upper reaches of the river valleys and the higher terrain. In these river valleys, more of the southern plant species are present particularly yellow birch. Speckled alder thickets occur on alluvial soils.

#### 1.3.2.2 Western Newfoundland Forest Ecoregion

The Western Newfoundland Ecoregion runs from the mouth of the Codroy Valley in the southwest corner of the island, northwest to Bonne Bay and eastward to Grand Lake. It encompasses almost all of District 15. This ecoregion is characterized by a humid climate with a relatively long frost-free period. It contains some of the most favourable sites for forest growth although there is considerable variation due to altitude and proximity to the coast. The *Dryopteris-Hylocomium*-balsam fir Damman type is the zonal forest for this region. The zonal soils are nutrient rich humic podzols with a very dark podzolic B horizon due to humus enrichment.

The ecoregion is home to more than 700 species of vascular plants (about 2/3 of the flora), more than 300 species of mosses and more than 35 different vegetation types (Bouchard et al., 1978, Robertson and Roberts, 1982, Belland, 1987, Bouchard et al., 1991). The absence of prolonged dry periods appears to have excluded fires from all but the coarsest textured soils. Consequently, balsam fir rather than black spruce is the dominant forest cover. Yellow birch is common and it displays its best growth in protected valleys below 200m elevation. It is absent at higher elevations and north of Deer Lake. Red maple is also most common and robust in this ecoregion. Other species which occur here include white spruce, eastern larch, trembling aspen, balsam poplar, white pine and black ash. Red pine, the rarest coniferous tree species in

Newfoundland (Roberts, 1985), does not occur in the district: its nearest location is the Howley-Sandy Lake area, 30 km to the northeast.

As a general rule overstocking is a more common silvicultural problem than understocking in western Newfoundland. Localized regeneration failures can occur in forests with a very dense fern and herb stratum such as the *Rubus*-balsam fir and the *Dryopteris*-balsam fir forest types. On these types, hardwoods, particularly mountain maple on seepage slopes, can form semi-stable thickets. These thickets may eventually develop into hardwood forest types. The development of *Ericaceous* heath after logging or fire is only observed on very small areas of coarse textured till. This is in stark contrast to central Newfoundland where succession to *Kalmia* heath is a common occurrence. The Western Newfoundland Ecoregion is subdivided into six subregions of which five are represented in the zone.

#### 1.3.2.2.1 Codroy Subregion

This subregion covers the southwest coast of District 14 and includes the Codroy Valley and Cape Anguille Mountains. The topography is rugged with deep, heavily forested, protected valleys. The most climatically favourable sites occur within this subregion.

#### 1.3.2.2.2 Corner Brook Subregion

This subregion extends from Bonne Bay to Stephenville and east to Grand Lake. In forestry terms, it is the only important subregion in District 15. The subregion is characterized by hilly to undulating terrain. The soil parent materials are dominated by slates and limestone till. Areas with calcareous till are distinguished by the occurrence of light colored marl deposits around ponds and in valleys. The parent material consists of shallow, stony silt loam underlain by limestone bedrock or calcareous basal till. The rugged topography is dominated by the *Taxus*-balsam fir and *Dryopteris-Rhytidiadelphus*-balsam fir site types.

The hilly, non-calcareous terrain in this subregion is dominated by shallow loamy soils over shale bedrock. However, the shallowness of the till does not adversely effect forest growth since nutrient rich seepage waters are held in the rooting zone by bedrock or a fragipan layer. The steep topography is dominated by the *Dryopteris*-balsam fir forest and supports some of the most productive stands in Newfoundland.

#### 1.3.2.2.3 Port au Port Subregion

This subregion covers the Port au Port Peninsula. Soils are shallow and wind exposed limestone barrens are common; however, the herbaceous flora is rich and diverse. Many calcareous arctic-alpine species, gulf endemics and Cordilleran disjuncts are characteristic of this subregion.

#### 1.3.2.2.4 Serpentine Range Subregion

This subregion dominates the western side of District 15 and extends from the Lewis Hills in the south to Bonne Bay in the north, spanning both shores of the Bay of Islands. The area is mountainous with elevations exceeding 800m. The vegetation is sparse, low and dominated by rock barrens. Despite this, the serpentine and ultra basic rock types support numerous rare plant species.

#### 1.3.2.2.5 St. George's Bay Subregion

This subregion occurs on the western portion of District 14 and extends coastally, from Port aux Port to Codroy. It has flat to rolling topography and the deep soil deposits are mainly glacial or glacial-fluvial till. Gypsum is present in this subregion but limestone is absent. The ecoregion is forested but coastal areas are marginally productive. Ombrogenous (low plateau) bogs cover much of the lowlands.

#### 1.3.2.3 Central Newfoundland Forest Ecoregion

This ecoregion is located in the north-central part of the island with a small outlet near Bay d'Espoir. The topography is gently rolling to hilly with most elevations between 150 and 450 meters. It has the most continental climate in insular Newfoundland with the warmest summers and coldest winters. It has the least wind and fog of any ecoregion and a growing season of 140-160 days and average precipitation of 900-1300mm.

This ecoregion is heavily forested and is the most distinctly boreal part of the island. Balsam fir, black spruce, and to a lesser extent white birch are the dominant tree species. There is an extensive fire history thus fire origin stands of black spruce and white birch cover extensive areas in the northern and eastern portions. Trembling aspen forms local stands after fire but is restricted to the central and northern portion.

*Hylocomium*-balsam fir is the zonal forest type and is dominant in areas not disturbed by fire. *Kalmia*-black spruce and *Pleurogium*-balsam fir forests are also common. The *Kalmia*-black spruce-lichen forests, which occur on outwash sands and gravels, are unique to this ecoregion. Red pine also occurs but is restricted to extremely dry sites. This ecoregion comprises less than five percent of the zone mostly in the Portage Pond subregion

##### 1.3.2.3.1 Portage Pond Subregion

This subregion includes the Annieopsquotch Mountains with elevations up to 677 metres. It has rugged topography and is heavily forested, primarily with balsam fir.

#### 1.3.2.3.2 North Central Subregion

The North Central Subregion has the highest maximum temperatures, lowest rainfall, and highest forest fire frequency on the island. The subregion extends from Clarenville to Deer Lake with a mostly rolling topography of less than 200 meters. The history of fire is evident by the pure black spruce forest with white birch and aspen stands that dominate the subregion. This subregion comprises less than one percent of the zone.

#### 1.3.2.4 Maritime Barrens Ecoregion

This ecoregion extends from the east coast of Newfoundland to the west coast through to the south central portion of the island. It is characterized by relatively mild winters with intermittent snow cover and the coldest summers with frequent fog and strong winds. The dominant landscape pattern consists of usually stunted, almost pure stands of balsam fir, broken by extensive open heathland. Good forest growth is localized on long slopes of a few protected valleys. The heaths are dominated by *Kalmia angustifolia* on protected slopes where snow accumulates and by cushions of *Empetrum nigrum*, or *Empetrum eamesii* on windswept ridges.

##### 1.3.2.4.1 Central Barrens Subregion

This subregion includes the barrens between the forests of Central Newfoundland and the foggy zone along the south coast. Summers are warmer, fog is less frequent, and snow cover is more persistent than in other subregions. Forest patches are common throughout the barren but Arctic-alpine species are poorly represented. Speckled alder is present but does not form alder swamps and bogs are slightly domed to raised.

##### 1.3.2.4.2 South Coast Barrens Subregion

This ecoregion covers the wind-exposed foggy zone along the South Coast. Elevations over 300 metres occur in most parts of this subregion. It provides important wintering ground for caribou due to the thin snow cover.

### 1.4 Ecosystem Dynamics

#### 1.4.1 Ecosystem Condition and Productivity

Landscape patterns determine the variety, integrity, and interconnectedness of habitats within a region. These landscape patterns are a direct result of the relationship amongst physical landforms and soils, disturbance history, and relationships among various species that make up the ecosystem communities. These factors, while listed separately for clarity, are unavoidably interrelated. Landscape patterns play a pivotal role in determining the current conditions and

health of forest ecosystems. These variables are evaluated in terms of productivity, stability and resilience.

Another important role determining the condition of a forest is change. Forests are an ever evolving entity, resisting stagnation, and constantly moving through their cycles of life, death, and renewal. The process of change over time is the essence of nature itself. It has been nature's underlying storyline since time began, and will continue to be until time ends.

The main forces of change in our natural forest ecosystems are disturbance and succession. A definition of disturbance would indicate that it initiates a change in a community structure which often ends up in the replacement of one set of species by another. However, replacement is not always the end result (e.g., a species like black spruce is aided in germination by disturbances like forest fire).

Disturbances range from the fall of a single tree, to the destruction of thousands of hectares by forest fires. While disturbances may be very destructive, they can often rejuvenate ecosystems and diversify landscapes.

Succession involves changes in both community composition and in the ecosystem structure and process. Succession is the orderly change whereby the dominant species is replaced by another species, then another etc. until a new dominant species establishes a relatively stable community. The following sections will discuss each of these concepts in more detail as they relate to the ecosystems of Planning Zone 6. For the most part this section will be descriptive and explanatory in nature. Specific examples of strategies and linkages to the Provincial Sustainable Forest Management Strategy will be detailed in subsequent sections.

#### 1.4.1.1 Productivity

Productivity is the accrual of matter and energy in biomass. In simple terms, primary productivity is the sum total of all biomass produced through photosynthesis. Secondary productivity occurs when this "primary" biomass is ingested and is added to that organism's biomass. Since secondary productivity is directly dependant on primary productivity, it is this primary productivity component that drives the system.

The level of primary production is dependant on the ability to produce biomass. This in turn is dependent on landscape features, soil, climate etc. In general terms, the more productive (ability to grow trees) a site is, the higher level of primary productivity. For example a forested stand would have a higher primary productivity than a bog or a good site would have a higher potential than a poor site.

Overall, the landscape in Planning Zone 6 has approximately 45 percent productive forest. As well, the relative proportion of site types is 21 percent good, 62 percent medium and 17 percent

poor with a mean annual increment (MAI) of 3.4, 2.7, and, 1.3 m<sup>3</sup>/ha/yr respectively. The distribution of productive sites across the landscape and range of productivity within these sites is largely dependent on landscape patterns, climate, and soils.

The more productive areas of the zone occur in the lowlands and gently rolling uplands of the zone. These areas have deeper soils and less exposed bedrock. The landscape patterns are more consistent and the growing season is longer. In the extreme western and northwestern parts of District 15 and the south central and south west portion of District 14 the soils are shallower with bedrock at or near the surface. The terrain is much rougher and the growing season is shorter.

In practice, it is nearly impossible to measure the amount of biomass produced in an ecosystem, or the energy consumed in the process. However, in the Provincial Sustainable Forest Management Strategy, criteria and indicators to monitor productivity have been identified. One method outlined is tracking mean annual increment in m<sup>3</sup>/ha/yr by tree species by ecoregion. This can be readily measured over time and manipulated through silvicultural treatments or affected by poor harvesting practices which increase soil compaction. An example of secondary productivity is the number of moose per unit area. One must also recognize the forests inherent biological limits however, when attempting to measure or manipulate site productivity.

#### 1.4.1.2 Resilience

Ecosystem resilience reflects the ability of the ecosystem to absorb change and disturbance while maintaining the same productive capacity and the same relationships among populations. Healthy forest ecosystems maintain their resilience and adapt to periodic disturbances. The renewal of boreal forest ecosystems often depend on these disturbances. Resilience is characterized by the forest's ability to stabilize vital soil processes and maintain succession whereby the system is returned to a community composition and the productivity level is consistent with the ecosystems physical constraints. To a large degree, a forest ecosystem's resilience is controlled by properties such as climate, parent soil, topography and flora.

The potential for populations to recover from low levels following disturbance by having adequate regeneration capacity and a balanced distribution of forest types and age classes provides a reliable measure of resilience at the landscape level. Indicators include the percent and extent of area by forest type and age class and the percentage of disturbed areas that are successfully regenerated. Resilience is determined by measuring and monitoring these parameters. Forest activities must be carefully planned to not upset the natural balance and lower an ecosystem's resilience.

The ability of forest stands to regenerate themselves demonstrates their resiliency in the face of harvesting or some other natural disturbance. An example is harvesting on the more fragile sites where steep slopes and shallow soil over bedrock increase the potential of site degradation beyond repair.

### 1.4.1.3 Stability

Nature is constantly changing and going through the unending processes of disturbance, growth, senescence, and decay. Therefore, stability of a forest ecosystem does not refer to one fixed position without variation. Ecosystem stability is more accurately defined as the maintenance of ecosystem changes within certain boundaries and the functional continuation of important potentials and processes such as energy capture.

There are three levels of stability; species stability, structural stability, and process stability. Species stability is the maintenance of viable populations or meta-populations of individual species. Structural stability is the stability of various aspects of ecosystem structure such as food web organization or species numbers. Process stability is the stability of processes such as primary productivity and nutrient cycling. To put stability in perspective, it must ensure that the system does not cross some threshold from which recovery to a former state is either impossible, (extinction) or occurs only after long time periods or with outside inputs (eg. loss of topsoil).

Some indicators of stability which can be monitored are: area of forest converted to non-forest use, area, percentage and representation of forest types in protected areas, percentage and extent of area by forest type and age class, and change in distribution and abundance of various fauna. These indicators can be measured and monitored to ensure stability is maintained and to evaluate the impact, if any, of forest activities on ecosystem stability.

### 1.4.1.4 Disturbance Regimes and Successional Patterns

There are four main driving forces that cause disturbance in the boreal forest. As stated in section 1.5.5, harvesting accounts for the majority of disturbance in the zone and occurs on a regular and consistent basis. Fire and insect damage are the other two major disturbances and occur on a more irregular or cyclic basis. With the exception of a major atypical windstorm, wind throw usually occurs after a stand is weakened by some other agent like insects. For this reason successional patterns after insect damage and wind throw will be discussed together. The following is a brief synopsis of successional patterns after each major disturbance type by forest type and site type.

#### 1.4.1.4.1 Harvesting

Regeneration patterns in the black spruce type after harvesting is mainly back to the black spruce type especially on the poorer sites. The component of balsam fir regeneration increases as the sites get better. There is substantial regeneration failure in this forest type with average not sufficiently restocked (NSR) rates of approximately 20 percent. The NSR rate is fairly constant across all site types. These sites would be candidates for planting with white or black spruce.

In the balsam fir types, regeneration success back to balsam fir is much higher averaging 85 percent. Regeneration rates to balsam fir are higher on the poor sites and fall off somewhat on the good sites where a small hardwood component exists. Regeneration failure is low across all ecoregion types at 5 percent.

Regeneration pattern in the mixed wood types is generally to balsam fir or back to mixed wood that is dominated by balsam fir. There is also a component of white spruce regeneration after harvest on these mixed wood types. There is a higher component of white birch regeneration after harvesting in types that had a higher percentage of hardwood before harvest. As well, the better the site class the more hardwood regeneration. Regeneration failure on the mixed wood types is variable across site types and ecoregions depending on local conditions but averages 20 percent.

Regeneration after harvest on the hardwood types is variable. Sites regenerate back to hardwood or to balsam fir in varying proportions. Mixed wood regeneration is also common. Usually the better the site the more likely the site will regenerate to hardwood. Since the timber supply for hardwood is so sensitive to regeneration of hardwood types, this component merits further survey.

#### 1.4.1.4.2 Fire

On the black spruce types regeneration is usually back to black spruce with a minor component of white birch. More white birch regenerates after fire on the better sites. Regeneration failure on the black spruce types is common after fire averaging 45 percent. Generally the rate of regeneration failure increases as the sites get poorer. On the balsam fir types regeneration is usually back to mixed wood dominated by balsam fir with a minor component of pure black spruce. More white birch regenerates after fire on the better sites. Regeneration failure on the balsam fir types is common after fire averaging 35 percent. Generally the rate of regeneration failure increases as the sites get poorer. On the mixed wood types regeneration is variable. The softwood hardwood sites regenerate the birch and mixed wood while the hardwood softwood sites tend to have a higher component of black spruce. The component of hardwood in the regeneration increases as the sites get better. Regeneration failure on the mixed wood forest types averages 20 percent and decreases as the component of hardwood in the original stand increases. Regeneration on the hardwood types is generally to hardwood and can be dominated by aspen if it was present in the original stand. Black spruce regeneration also occurs after fire.

#### 1.4.1.4.3 Insect

Balsam fir is highly susceptible to insect attack from the hemlock looper and spruce budworm whereby black spruce and hardwood is hardly impacted by these insects. For this reason, stands with a high component of balsam fir are more susceptible to insect attack and subsequent wind throw.

Mature balsam fir types usually regenerate to balsam fir or to balsam fir hardwood mixtures. Disturbance by insect kill in young balsam fir stands can cause succession to white spruce. In black spruce stands regeneration is usually back to black spruce and increases as the sites improve. Regeneration patterns in mixed wood types usually depend on the type of mixture. If black spruce is a component then it will persist and form part of the new stand. Otherwise balsam fir and balsam fir/hardwood mixtures regenerate after insect attack. Regeneration patterns in the hardwood types are variable. Regeneration failure occurs approximately 20 percent of the time but can be significantly higher if pure stands of immature balsam fir are killed.

#### 1.4.2 Biodiversity

Biodiversity is a term used to describe the variety of life on earth. A basic definition of biodiversity includes the variety of animals, plants and microorganisms that exist on our planet, the genetic variety within these species and the variety of ecosystems they inhabit.

Some scientists estimate the total number of species on earth between two and 100 million, however, the best estimate is considered to be within the range of 10-30 million. This is remarkable considering only 1.4 million species have actually been given names. The largest concentration of biodiversity on the planet is found in the tropical areas of developing countries. Small areas of rainforest often contain species that are found nowhere else on earth. Mishandling even small tracts of land could lead to extinction of several species, one of which may hold the key for the prevention or cure of some disease.

While the boreal forest does not have the extent of biodiversity that some of the equatorial regions possess, Canada does have just over 70 000 species of plants, animals, and micro organisms in its boreal and other forest regions. An equivalent number remain un-described or unreported by science. While the boreal forest has less diversity of large plants than many other forest regions, it has greater biological diversity in some micro organisms. For example, the boreal forest has fewer tree species than the tropical rainforest but 500 times as many mycorrhizal fungi. Despite the large number of organisms contained within the boreal forest, only five percent are actually plants and vertebrates. The other 95 percent remain largely unrecorded and unstudied. As a result, we need to conduct more surveys and studies and manage with caution so that species are not inadvertently wiped out.

Biodiversity provides such essential services for humans as climate control, oxygen production, purification of freshwater supplies, carbon dioxide removal from the atmosphere, soil generation, and nutrient cycling. Without the species that provide these processes, humanity would be unable to survive.

There have been several international initiatives during the 1900's directed at developing strategies to protect Earth's biodiversity. Canada signed the *United Nations Convention on*

*Biological Diversity* in 1992 at the Rio de Janeiro earth summit. All governments at both the federal and provincial level have agreed to meet these objectives through implementation of the 1995 *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biodiversity*.

The three components of biodiversity are species diversity, genetic diversity, and ecosystem diversity.

#### 1.4.2.1 Species Diversity

Species diversity describes the overall range of species in a given area or ecosystem. Species are groups of animals, plants, and micro organisms capable of producing fertile offspring. Species extinction is the most dramatic and recognizable form of reduced biodiversity; habitat loss the most drastic in terms of far reaching effect. The prevention of species extinction is a key factor in the conservation of biodiversity. Changes in species population levels indicate the potential for serious changes in ecosystem integrity.

#### 1.4.2.2 Genetic Diversity

Genetic diversity describes the range of possible genetic characteristics found within and among different species. Hair and eye colour, weight and height, are examples of genetic diversity found in humans. Genetic diversity within species is the foundation of all biodiversity. Assessing genetic diversity does not mean tracking every gene in the zone's forest. Responsible planning should design and implement measures which maintain or enhance viable populations of all forest vegetation species and which use the genetic diversity of commercially important species to a maximum benefit. The genetic diversity of commercially important species can also be managed to increase economic benefit from some portions of the landscape while allowing other portions to provide greater social and ecological values. Genetic diversity is the basis by which populations (flora and fauna) can adapt to changing environmental conditions.

#### 1.4.2.3 Ecosystem Diversity

Ecosystem diversity describes the range of natural systems found throughout a region, a country, a continent, or the planet. Wetlands and grasslands are examples of ecosystems in Canada. A complex and intricate mix of plants, animals, micro organisms and the soil, water, and air they occupy create virtually limitless ecosystems around the world.

A forest interspersed with barrens, marshes, lakes and ponds provides for diversity across the landscape. Each ecoregion in the province should have representative areas protected which displays the diversity where such exists. These areas can serve as a benchmark from which to measure and guide management decisions. These representative areas protect the integrity of the ecoregion and are vital for guiding management actions. As benchmark areas, they will illustrate the multi-species mosaic that planning actions must maintain. Representative and protected areas will be discussed in more detail in Section 4.

As stated, specific examples of on the ground actions in support of these concepts will be presented throughout the plan.

## 1.5 Forest Characterization

### 1.5.1 Land Classification

Table 2 displays the land classification broken down by ownership and district for Planning Zone 6. The total mapped land area in the zone is approximately 1.27 million hectares. There are approximately 750 000 and 45 000 ha not mapped in Districts 14 and 15 respectively. The following discussion will focus mainly on the mapped area.

There are four basic categories that currently represent how the land is classified; productive, non productive, non-forest and fresh water. Individual break outs by district and owner are shown in Table 2. Figures 4 and 5 displays the relative percentages of each major land class category in each district with all ownerships combined. The ratios across ownerships in each district are skewed toward CBPPL because it has a greater percentage of productive area. This is because crown land holdings in both districts is concentrated near the coast or near interior barrens where site productivity is not as good.

In general, District 14 has 37 percent of its total land area in the productive forest category while District 15 has 56 percent. This is mainly due to the high proportion of area in the bog, barren, and scrub category in the coastal and interior areas in District 14. The higher the percentage of productive forest generally means that the forest is more contiguous and not as fragmented by bog, scrub and water. This has implications for harvesting and road building costs which are generally higher when the forest is more fragmented. Another point is that the Forest Service is now classifying scrub by site, height and density class as new inventories are completed. This information will be invaluable in determining which scrub areas are marginally productive or can meet some other non-timber objective.

Table 2 Land classification by district and ownership in hectares for Planning Zone 6.

Land Class	Ownership				Total		
	Crown		CBPPL		14	15	Total
	14	15	14	15			
disturbed	5504	2866	4598	5446	10102	8312	18414
age class 1	45933	9685	25135	57696	71068	67381	138449
age class 2	33252	13971	26870	28175	60122	42146	102268
age class 3	15844	10912	17152	26150	32996	37062	70058
age class 4	13164	16606	7695	32463	20859	49069	69928
age class 5	21786	18632	6961	28390	28747	47022	75769
age class 6	31090	9469	10245	16866	41335	26335	67670
age class 7	12332	4844	4508	8574	16840	13423	30263
Total Productive	178954	86988	103115	203764	282068	290752	572820
softwood scrub	158298	28214	30450	54126	188748	82340	271088
hardwood scrub	3571	3300	2275	2809	5857	6110	11967
Total Non-Productive	161880	31514	32725	56980	194605	88449	283054
rock barren	55475	26924	6502	12246	61977	39170	101147
soil barren	54143	15095	8752	7826	62895	22921	85816
bog	81364	14502	19172	25074	100538	39607	140145
cleared land	2097	816	241	573	2339	1389	3728
agriculture land	1602	592	339	147	1941	739	2680
residential	2970	3121	93	700	3062	3821	6883
right of ways	1699	745	1571	2268	3270	3113	6383
miscellaneous	9755	121	236	298	9961	419	10380
Total Non Forested	199685	62761	33908	49133	236583	111180	347763
Fresh Water	38803	5493	6367	18676	45170	24169	69339

Total All	57931	18604	17911	32860	75842	51454	127297
Classes	1	1	5	8	6	9	5

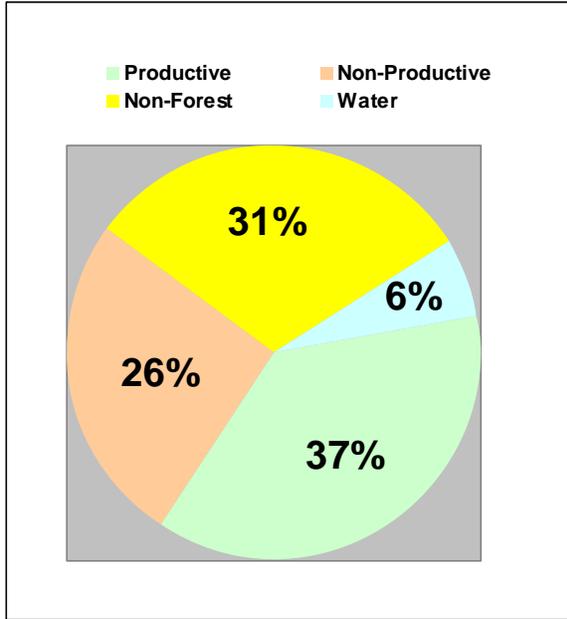


Figure 4 Land class breakdown for all ownerships in District 14

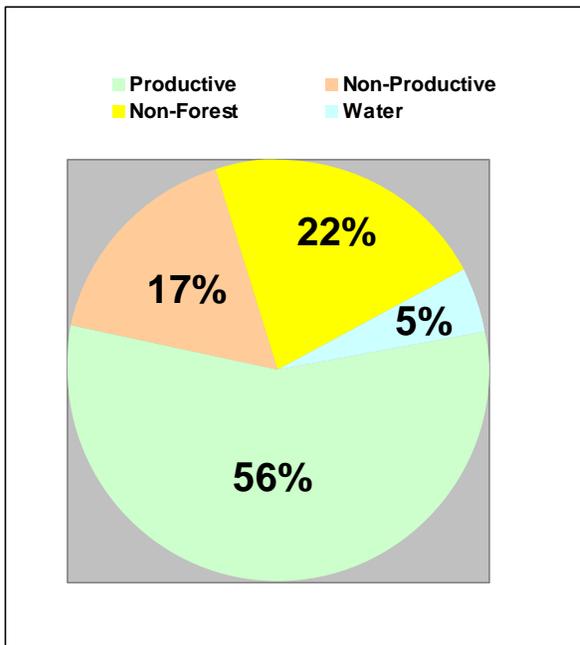


Figure 5 Land class breakdown for all ownerships in District 15

### 1.5.2 Age Class

Individual tree ages in a stand can all be the same after fire or planting however, in most cases the ages vary. Foresters describe ages in terms of age classes which generally encompass 20 years. The age classes present in the zone are regenerating (age class 1, 0-20 years), immature (age class 2, 21-40 years), semi-mature (age class 3, 41-60 years), mature (age class 4, 61-80 years), and over mature (age class 5, 81-100 years), (age class 6, 100-120 years), (age class 7, 120+ years). The combined age class distribution in each district for the entire productive forest is shown in Figures 6 and 7. In general terms, the more balanced the age class distribution in a district, the higher the potential even flow sustained yield of timber can be because continuous timber supply is limited by the age class with the lowest area. The age class structure for District 14 is typical of that of the island with an abundance of area in the young and old age classes with a dip in the intermediate age classes. In District 15 the age class structure is more balanced. Age class structures by owner and district will be discussed in more detail in each pertinent five year plan. The age class structures for Crown land in Districts 14 and 15 as well as strategies to rectify any imbalances or impacts on wood supply of poorly structured age classes will be presented in Section 3 of this plan.

### 1.5.3 Site Class

The productive forest in the zone is further sub-divided along a gradient of productivity ranging from poor to good site class. The site class is determined through air photo interpretation supplemented with field checks and is based primarily on the sites ability to produce timber. Site capability is determined on a number of factors some of which include soil fertility, moisture regime and geographic (slope) position. Generally the balsam fir and softwood hardwood working groups occupy the better sites in the zone. The black spruce working groups dominate the very dry and very wet areas that are of poorer site quality.

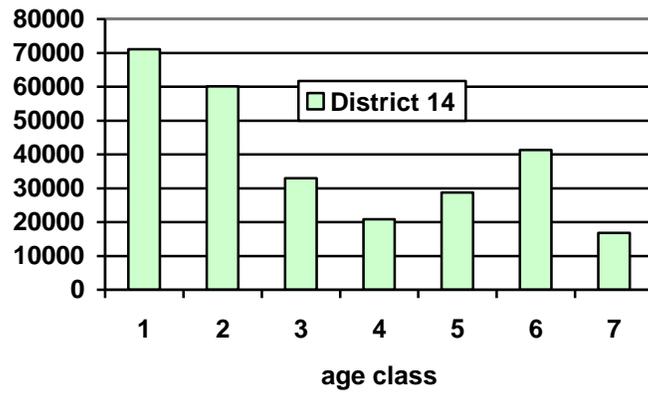


Figure 6 Age class distribution for all ownerships in District 14

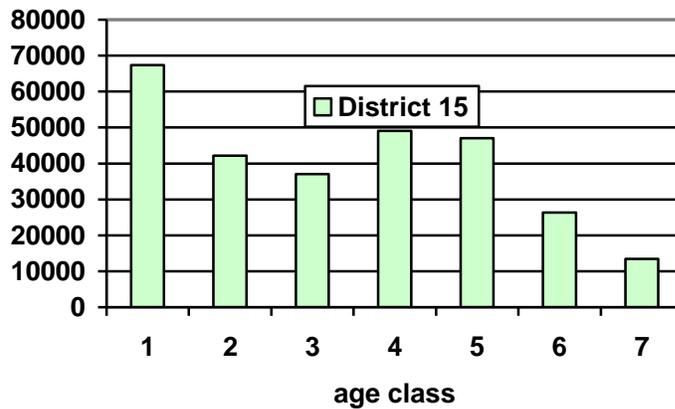


Figure 7 Age class distribution for all ownerships in District 15

The distribution of area of all ownerships combined by site class for each district is shown in Figures 8 and 9. As with productivity, the proportion of better sites favours CBPPL timber limits. On average, good sites are capable of producing 3.4 m<sup>3</sup>/ha/yr, medium sites 2.7 m<sup>3</sup>/ha/yr, and poor sites 1.3 m<sup>3</sup>/ha/yr.

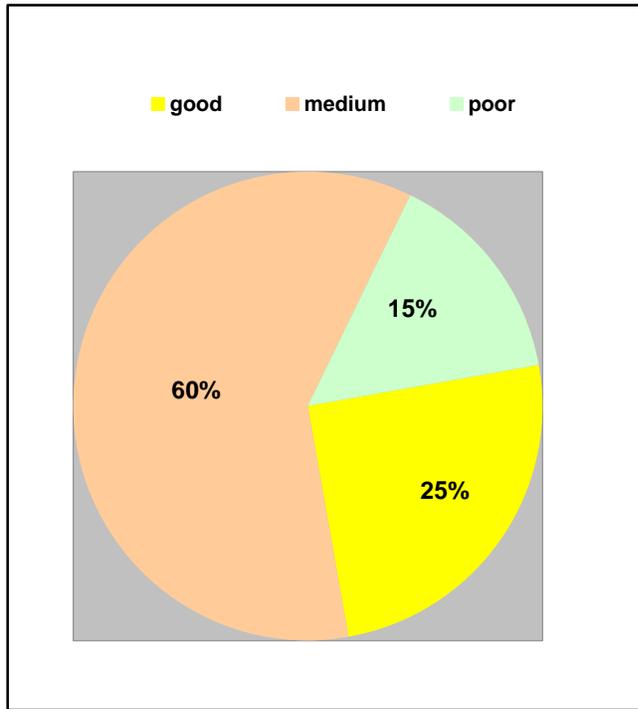


Figure 8 Site class breakdown for all ownerships in District 14

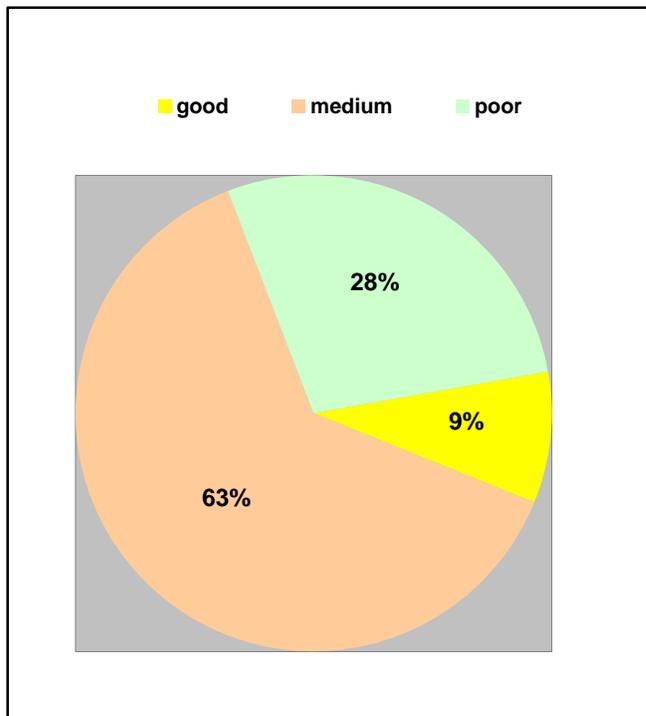


Figure 9 Site class breakdown for all ownerships in District 15

#### 1.5.4 Species and Working Group

Working group describes the dominant tree species present in a forest stand. This species may occupy 100 percent of crown closure of a stand or may be present in association with other species. The working group designation describes the stand in general terms based on the prevalent species whereby species composition describes specifically, the relative proportion of each individual tree species that make up a stand.

In the zone, the softwood working groups dominate accounting for over 90 percent of the productive forest. Balsam fir (bF) is by far the most prolific accounting for 72 percent of the working groups in District 14 and 15 (Figures 10 and 11). Balsam fir can occur in pure stands or in association with one or more of black spruce, white spruce, white birch, or larch in varying species compositions. The black spruce (bS) working group accounts for approximately 10 percent in each District. As with balsam fir, black spruce can occur as pure stands or in association with other species listed above. Softwood hardwood working groups occupy nine and 13 percent of the productive forest area in Districts 14 and 15 respectively. This working group occurs as varying mixtures of fir, spruce, and birch. The hardwood softwood (hS), and white birch (wB), white spruce (wS) working groups occupy around five percent of the productive forest in both districts. Approximately three percent of the productive forest is classed as disturbed (DI). Disturbances include harvesting, which accounts for most of the total, insect damage, fire, wind throw, and flooding. The relative percentages hold true for all ownerships in both districts with the exception of black spruce in District 14. There is a higher percentage of black spruce on crown land because there are more poor sites.

#### 1.5.5 Forest Disturbances

In the past 20-25 years approximately 30 000 ha have been disturbed by some means on land in the zone. Harvesting has accounted for a large portion of this disturbance at approximately 9 400 ha. Insect damage has occurred on over 3 800 ha with 12 percent in light

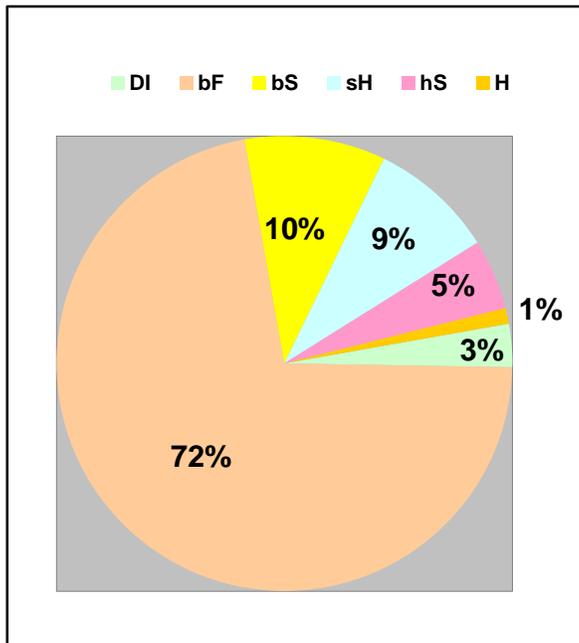


Figure 10 Working group breakdown for all ownerships in District 14

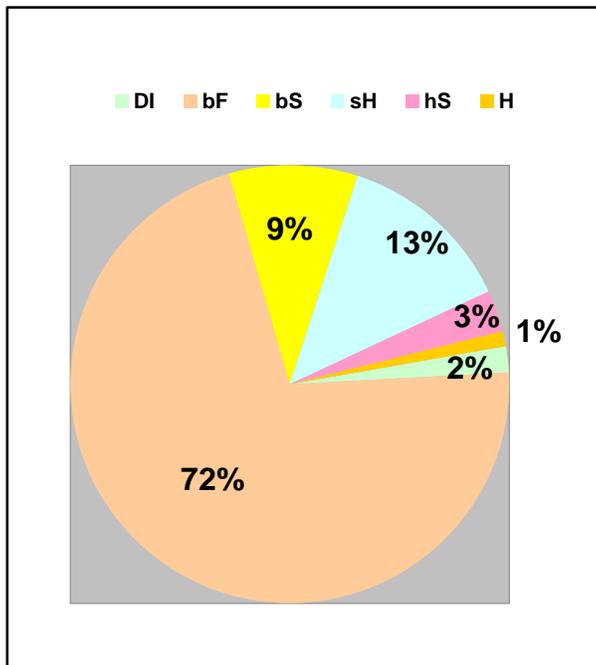


Figure 11 Working group breakdown for all ownerships in District 15

(0-25 percent mortality), 11 percent in moderate (26-50 percent mortality), 6 percent in severe (51 -75 percent mortality) and 71 percent in extreme (76+percent mortality). There has been over 11 700 ha of mortality due to blow down which has occurred as scattered pockets in mostly remote areas. This usually occurs after another disturbance (like insect damage) has weakened a stand. Other miscellaneous disturbances account for approximately 450 ha. It should be noted that these areas are not mutually exclusive and there is overlap between disturbances. (ie. insects may have killed a stand, followed by salvage harvesting and then perhaps fire).

The main forest insects which have affected forests in western Newfoundland are the hemlock looper (1949, 1961, 1962, 1969, 1986-88, 1995, 1996), the spruce budworm (1956, 1978-80 to present at lower levels), the balsam woolly adelgid (1963, 1970-present) and the birch casebearer (1970-present). A chemical spray program was initiated in 1969, to aid in the control of the hemlock looper. Since then, the aerial application of insecticides has been used regularly as a management tool to control insect pests of balsam fir. In more recent years chemical insecticide use has been dropped in favour of the biologically insecticide bacillus thurengiensis (bT), a naturally occurring, biological control agent. Despite the use of insecticides, the hemlock looper and the spruce budworm continue to pose a significant threat to the forests of the zone and new infestations are likely to develop over the next 20 years.

Another insect of particular importance is the balsam fir sawfly, a native defoliator that rarely causes significant mortality. Typically, an infestation of this insect collapses due to parasitism and viral diseases well before lethal damage occurs. However, a sawfly epidemic began in the Bottom Brook area of District 14 in the early 1990's and spread northward into District 15. This infestation, which has now collapsed has resulted in serious growth loss in the affected forests. The balsam woolly adelgid is an ongoing insect pest of balsam fir, particularly in District 14. This insect occurs mainly on the coastal lowlands and impacts the newest tree growth causing node swelling and stagnation which results in severe growth loss of affected stands and poorer wood quality. To date there has been no available treatment for this insect other than stand conversion.

## **Section 2 Past Activities – Corner Brook Pulp and Paper Limited**

### **2.1 District 14**

#### **2.1.1 Overview**

CBPPL's harvesting and silviculture activity in FMD 14 from 2009 to 2013 is outlined in tables 3 and 4. Harvesting in the district over the last five years averaged only 823 m<sup>3</sup>/yr., which is well below the current AAC of 115,000 m<sup>3</sup>. Over the same period, 2659 hectares were silviculturally treated with approximately the same amount in each treatment type.

All areas harvested in the past five years can be viewed in context with proposed activities on the operating area maps in Appendix 3.

### 2.1.2 Harvesting

Table 3 summarizes the total harvest on CBPPL limits in FMD 14 and compares it to the AAC for the period. During the period 2009-2013, CBPPL harvested 4113 m3 in the district compared to an AAC available of 543,000 m3. This very low harvest level reflects the high delivered cost of wood in FMD 14 compared to other sources. Details of the harvest by Crown in the district can be found in the Crown plan.

Fmd 14	AAC (Class 1)	AAC (Class 3)	Harvest Class 1 (CBPPL)	Harvest Class 1 Crown	Harvest Class 3 (CBPPL)	Harvest Class 3 Crown	Total
2009	81,000	18,000	0	0	0	0	0
2010	81,000	18,000	0	0	0	0	0
2011	97,700	17,300	0	3,113	0	0	3,113
2012	97,700	17,300	0	0	0	0	0
2013	97,700	17,300	1,000	0	0	0	1,000
Total	455,100	87,900	1,000	3,113	0	0	4,113

( Note: Table includes estimates for 2012 and 2013)

Table 3 – Summary of CBPPL Softwood Harvest in FMD 14 for 2009-2013

### 2.1.3 Silviculture

Table 4 summarizes the silviculture activity on CBPPL limits in FMD 14. During the period 2009-2013, CBPPL thinned 804 hectares, planted 625 hectares and herbicided 1230 hectares in the district.

Treatment	2009 (ha)	2010 (ha)	2011 (ha)	2012 (ha)	2013 (ha)	TOTAL
Pre-Commercial Thinning	378.7	235.2	190.4	0	0	804.3
Planting	0	584.4	40.9	0	0	625.3
Herbicides	412	460	358	0	0	1230
TOTAL	790.7	1279.6	589.3	0	0	2659.6

( Note: Table includes estimates for 2013)

Table 4 – Summary of CBPPL Silviculture Activities in FMD 14 for 2009-2013

## 2.1.4 Natural Disturbance

### 2.1.4.1 Fire

District 14 has had a very infrequent fire history due to its relatively long winters and abundant precipitation. Over the past planning period there were 32 reported forest fires but only 180 ha of productive forest was burnt. Most of these fires were small grass fire which occurred early in the spring.

### 2.1.4.2. Insect

The population of balsam fir sawfly collapsed in District 14 in the early 2000's and moved eastward into District 15. There were 0 ha moderately and severely defoliated area due to the balsam fir sawfly during the 2008-2012 time period in FMD 14.

The hemlock looper population also collapsed in the early 2000's with 0 ha moderately and severely defoliated from 2008-2012.

The balsam woolly adelgid continues to be a problem insect pest in the district with stand conversion the only silvicultural option.

## 2.2 District 15

### 2.2.1 Overview

CBPPL's harvesting and silviculture activity in FMD 15 from 2009 to 2013 is outlined in tables 5 and 6. Harvesting in the district over the last five years averaged 178,608 m<sup>3</sup>/yr., which is below the current AAC of 296,400 m<sup>3</sup>. Over the same period, 4838 hectares were silviculturally treated with the majority in pre-commercial thinning and planting.

All areas harvested in the past five years can be viewed in context with proposed activities on the operating area maps in Appendix 4.

### 2.2.2 Harvesting

Table 5 summarizes the total harvest on CBPPL limits in FMD 15 and compares it to the AAC for the period. During the period 2009-2013, CBPPL harvested 893,042 m<sup>3</sup> in the district compared to an AAC available of 1,491,200 m<sup>3</sup>. Details of the harvest by Crown in the district can be found in the Crown plan.

Fmd 15	AAC	AAC (Class 3)	Harvest Class 1 (CBPPL)	Harvest Class 1 Crown	Harvest Class 3 (CBPPL)	Harvest Class 3 Crown	Total
Year	(Class 1)						
2009	285,000	16,000	96,675	3,076	25,249	0	125,000
2010	285,000	16,000	169,066	3,483	7,519	0	180,068
2011	249,300	47,100	176,024	6,905	0	0	182,929
2012	249,300	47,100	214,369	3,576	0	0	217,945
2013	249,300	47,100	183,100	4,000	0	0	187,100
Total	1,317,900	173,300	839,234	21,040	32,768	0	893,042

( Note: Table includes estimates for 2012 and 2013)

Table 5 – Summary of CBPPL Softwood Harvest in FMD 15 for 2009-2013

### 2.2.3 Silviculture

Table 6 summarizes the silviculture activity on CBPPL limits in FMD 15. During the period 2009-2013, CBPPL thinned 2160 hectares, planted 2068 hectares and herbicided 610 hectares in the district.

Treatment	2009 (ha)	2010 (ha)	2011 (ha)	2012 (ha)	2013 (ha)	TOTAL
Pre-Commercial Thinning	608.6	293.2	216.3	442.0	600	2160.1
Planting	555.9	97.0	832.4	142.8	440	2068.1
Herbicides	0	0	0	270	340	610.0
TOTAL	790.7	1279.6	589.3	0	0	4838.2

( Note: Table includes estimates for 2013)

Table 6 – Summary of CBPPL Silviculture Activities in FMD 15 for 2009-2013

### 2.2.5 Natural Disturbance

#### 2.2.5.1 Fire

District 15 does not have an active fire history due to its long winters and abundant precipitation. In fact there were only six fires recorded in the last planning period which burnt less than one ha of productive forest.

#### 2.2.5.2. Insect

As stated, the population of balsam fir sawfly collapsed in District 14 in the early 2000's and moved eastward into District 15. There were 14 483 ha moderately and severely defoliated and 3 085 ha treated during the period of 2008-2012.

The hemlock looper population collapsed in 2004 with only 33 ha moderately and severely defoliated from 2008-2012 and 3700 ha treated with bacillus thurengiensis (bT.) The population of hemlock looper is low, but each year, the department conducts egg mass surveys to determine the presence of insects and the need for a spray program.

### **Section 3 Timber Supply Analysis**

#### 3.1 Introduction

The Province reviews its timber supply every five years in order to account for any changes in forest land base, growth rates, and management strategies. This schedule is consistent with the Forestry Act, 1990, which established management by forest management district and mandates that a wood supply analysis be completed every five years. The result of this analysis is a new set of annual allowable cuts (AAC's) for each forest management district. These AAC's are defined as the maximum annual rate at which timber can be harvested at a sustainable level indefinitely into the future (in reality, the AAC figures are applicable for a period of 160 years into the future and not infinity). Annual allowable cuts must be calculated on a district basis, however when "rolled up" provide us with the annual allowable harvest level for the island.

#### 3.2 Guiding Principles and Policy Direction

The key underlying principles that guided this analysis were: (i) the AAC must be sustainable; (ii) the level of uncertainty (risk) associated with the AAC must be minimized by using empirical information wherever possible; (iii) there must be conformity between information and assumptions used in the analysis and actions and decisions taken on the ground; (iv) the analysis must be consistent with other forest values and objectives; and (v) the timber supply calculation must consider economic factors, not solely the physical supply of timber.

In concert with the policy of establishing sustainable timber harvest levels, government policy requires that harvesting not exceed the established AAC's. Likewise, government's policy is to optimize forest industry opportunities from the sustainable fiber supply. Government also requires consultation be conducted during the timber analysis. In this analysis, public input was achieved through the district managers and, in some cases, planning teams. The forest industry was consulted directly throughout the process. As well, there was a 30 day consultation process

whereby a draft of the gross AAC's and methodology was published on the government web site for public review and comment.

### 3.3 Factors Affecting Timber Supply

The forests of insular Newfoundland are very variable in terms of age distribution. Typically, there are significant amounts of mature/over-mature forest and regenerating forest, and limited intermediate aged forests. This imbalance is not unusual in a boreal forest where cyclic catastrophic disturbances are common. Figure 6 illustrates this age class imbalance.

The insufficient amount of intermediate age forest on the island is one of the most important factors influencing AAC's therefore it is the basis for many of our forest management strategies. Essentially a matrix of measures is employed which is designed to fill the gap in the age structure. These range from an aggressive forest protection program to keep the mature and over-mature stands alive as long as possible so that they can be harvested before they collapse naturally, harvesting programs that attempt to exclusively target the oldest stands first in order to minimize the harvesting pressure on the naturally weak intermediate age classes, and thinning of the regenerating forest so that it becomes operable at an earlier age.

Another important aspect of the province's forest that poses a challenge to forest managers is the natural fragmentation of the resource. The province's landscape is carved by many ponds, bogs, rivers, streams, and rock outcrops resulting in relatively small pockets of timber scattered across the landscape. This makes the determination of an economic timber supply very challenging given that each stand has unique economic characteristics.

Arguably the most important factor affecting present and future AAC's is land base. The land base available for forest activity is constantly being eroded by other users. There is an approximate correlation between AAC and land base in that a one percent loss of land base represents a one percent drop in AAC. It is important therefore that we minimize loss to the forest land base and continue to explore ways to grow more volume on the existing land base to mitigate this loss.

### 3.4 Timber Supply Analysis

In 2010, the Forest Service began another review of the provincial timber supply. Consistent with Department's vision, the analysis was structured to determine sustainable timber supplies while respecting a multitude of social, economic and environmental objectives. Timber supply, in this context, refers to the rate at which timber is made available for harvesting on a sustainable basis.

The determination of supply (represented as AAC's) involved the use of computer models that forecast the sustainability of possible AAC levels. These models require three basic inputs. First, a description of the current state of the forest (forest characterization and availability), second, the growth rates associated with the current forest, and third, the management strategies applied to the forest. To arrive at these basic inputs require careful and detailed consideration of a broad range of both timber and non-timber values. More specifically, the following was considered in determining the sustainable timber supply.

#### 3.4.1 Forest Characterization

To get a current description of the forest resource (or stock), the Province has invested significant resources into creating and maintaining a Provincial Forest Inventory. Although the latest inventories used in the 2010 Wood Supply Analysis for this zone, the estimate of forest stock is kept current through an annual update program. This program accounts for all natural and man-made disturbances such as: fire, insects, harvesting, and any enhancement programs, including tree planting and pre-commercial thinning. Also, each stand in the forest inventory is updated to reflect any yield changes that may have occurred since the previous inventory update

#### 3.4.2 Land Availability

The updated Forest Inventory was reviewed and classified at the stand level on the basis of the availability of each stand for harvest. The classification system consists of two broad classes; Class 1 - available for harvest under normal conditions, and Class 3 - has restrictions for harvesting due to economic constraints.

The Class 3 has been further subdivided into:

- a) area can be harvested with reasonable economic restrictions (expensive wood) and
- b) area is highly unlikely to be harvested under current economic conditions.

Only the first portion of Class 3 is used to calculate an AAC for that category. The categories associated with the portion of Class 3 land, which are deemed unavailable for harvest, incorporates a broad range of timber and non-timber values. These values include:

##### 3.4.2.1 Non-Timber Related

Consideration of non-timber values has a direct impact on Provincial AAC's. It is obvious that as the amount of productive forest land available for timber management drops, so too will the AAC. With the current restrictions, the AAC landbase (area where harvesting operations can occur) is only 18 % of the total productive forest land base. On average, in any one year, less than 1% of the productive forest land base is influenced by harvesting operations.

#### 3.4.2.1.1 No-Cut Buffer Zones

The Province has guidelines that require all water bodies (visible on a 1:50,000 map sheet) be given a minimum 20 meter uncut buffer (from water's edge). In addition to these legislated water buffers, District Ecosystem Managers, in consultation with Planning Teams, have increased buffer zone widths beyond the 20 meter minimum to protect special values such as: salmon spawning areas, cabin development areas, aesthetic areas, wildlife habitat, outfitting camps, etc.

#### 3.4.2.1.2 Pine Marten and Caribou Habitat

Habitat specialists are working in consultation with industry to study both species and ensure adequate habitat will be available for pine marten and caribou into the future. This work is examining the quantity and quality of habitat, as well as, the connectivity of habitat. With respect to Caribou, both the Forest Services Branch and the Wildlife Division are working together to develop an adaptive management strategy. This initiative started during the development of Zone 5 planning process in 2011 and will be further explained in Section 4.2.1.1.2

#### 3.4.2.1.3 Wildlife Corridors

As part of the evaluation process for harvesting plans, wildlife specialists sometimes recommend managed corridors to ensure various species of wildlife have sufficient cover to move around the landscape. These corridors are temporal in nature and generally have little impact on timber supply.

#### 3.4.2.1.4 Protected Areas

All established and proposed protected areas are removed from the AAC calculations.

#### 3.4.2.1.5 Watersheds

For each of the forest management districts in Planning Zone 6, all of the public protected water supply areas and some of the larger watersheds (eg Gander River and Terra Nova River) were digitized and captured within the forest inventory. These watersheds were added to the database in order to address any concerns about forest management within these watersheds and to permit the Forest Service to report on proposed activities within these watersheds over time.

#### 3.4.2.2 Timber Related

The Department also reduces the gross AAC's by taking into account other potential losses of timber, which include:

##### 3.4.2.2.1 Insect/Fire/Disease Losses

The Department reduces AAC's to account for anticipated future losses resulting from insects, disease and fire using historical information.

#### 3.4.2.2.2 Logging Losses

Surveys of recent harvested areas are conducted each summer throughout the Province to determine the quantity and quality of fiber remaining. The estimates from these surveys are used to reduce the available AAC. As well, information is gathered throughout the AAC period to determine projected volume against the actual harvested volumes within a given area. The difference is evaluated and applied to net down the gross AAC numbers.

#### 3.4.2.2.3 Operational Constraints

Areas that are inaccessible (surrounded by bogs or hills), timber on steep slopes, and low volume stands are removed from the AAC calculation up front. Also, significant adjustments are applied to the Provincial Forest Inventory for stands deemed operable in the timber analysis but left unharvested within operating areas. The reasons for this are linked to the character of Newfoundland's forests; low volume, steep slopes, rough terrain, and excessively wet ground conditions etc.

Again, all these timber and non-timber related issues are applied directly in the AAC calculation to ensure harvest levels do not exceed the sustainable level. With the introduction of new values and the broader application of current values, the pressure on future AAC's will continue to increase. These factors and their impacts on timber supply will be further discussed in section 3.5.

#### 3.4.3 Growth Forecasting

A key requirement for forecasting future wood supply is an understanding of how forest stands grow and develop through time. That is, as a forest stand develops, how much merchantable (i.e. harvestable) volume does it carry at any given point? These yield forecasts (referred to as yield curves) are required for each type of forest stand (called a stratum) comprising the forest under consideration. In Newfoundland, there are dozens of distinct forest strata for which separate yield curves are required. These are defined by the tree species in question (e.g., balsam fir, black spruce), the site quality (e.g., good, medium, poor), the geographic region (e.g., Central Newfoundland) and other factors likely to affect yield.

Yield curves are a key element in a wood supply analysis. In fact, the validity, or "usefulness" of the wood supply analysis is determined by the truth or "correctness" of the yield forecasts. While there is no way of predicting with certainty how stands will actually grow in the future, care must be taken to ensure that the yield projections used are realistic and reasonable. Respecting the sensitivity and importance of these forecasts, the Forest Services Branch has directed a large portion of its resources and time into developing realistic yield curves. Two growth models were used, one for projecting stand development under natural conditions and the other for projecting growth under managed (i.e., silviculturally enhanced) conditions. Tree and stand development

data generated from the Forest Service's Forest Inventory Program were used to make stand growth predictions. These projections were then checked against empirical data from thousands of temporary plots established throughout the Island. If the projections varied from the real life evidence, the curves were adjusted to make them more accurate. In this analysis, yield curves were developed on an ecoregion basis to more accurately portray the varied stand growth within and among the districts.

#### 3.4.4 Management Strategies

With the current state of the forest described and the yield forecasts developed, the next step was to design a management strategy for each sector of the forest. The key objective was to maximize long term AAC while at the same time taking into account other forest values. This involved developing strategies that minimized fiber losses and enhance forest sustainability.

##### 3.4.4.1 Harvest Flow Constraints

An even-flow harvest constraint was used in the analysis to maximize the sustainable harvest level. This strategy produced the maximum even flow harvest but resulted in less than optimum economic use of the forest resource. If no even flow constraint is used and harvest levels are permitted to fluctuate in response to market value, the overall economic potential of the forest will increase. However, the lower economic potential is offset by stability in manufacturing plants and employment.

##### 3.4.4.2 Spatial Analysis

A major improvement that occurred in both the previous and the 2010 wood supply analysis is manual harvest scheduling. In 2001, the harvest scheduling was an automated process where the software picked the stands to be harvested over the 25 years based on user supplied criteria. The 2001 approach was an improvement over previously wood supply processes because there was no harvest scheduling completed. Basically, the software used cannot realistically know all the operational restrictions within a forest management district. By utilizing the spatial manual process, on the ground conditions that restrict harvesting are accounted for when a spatial harvest schedule is defined.

The proposed harvest schedule is then played back through the modeling software to evaluate its sustainability and determine if non-timber objectives are achieved. In most cases, the harvest scheduling exercise has to go through several iterations before an acceptable harvest schedule could be realized. The spatial arrangement of areas for timber harvesting is especially challenging in this province because of the natural fragmentation of our forests. This model provided forest planners with the ability to mimic realistic timber harvest schedules based on current practices and identify forest stands that are considered not as accessible for harvesting.

Manual harvest scheduling has several benefits. First, it fosters the long term sustainability of our AAC's by mimicking current harvest practices and accounting for actual on the ground conditions which delay or restrict harvesting of stands. Secondly, the mapped 25 year harvest schedules build credibility into the forest management process. Every stand that will be

harvested over the next 25 years must already be in the second (20-40 years old) or third (41-60) age class, can be easily identified and highlighted on the harvest schedule maps. Being able to see the wood that will be harvested in the future will help reassure people the resource is being used in a responsible manner. Next, harvest scheduling will help integrate the management of other forest resource values into timber management planning. All forest values can be typed directly to discreet forest areas, providing the link allowing the many different forest values to be managed simultaneously. The forested areas needed for each resource can be mapped and potential conflicts can be addressed.

Finally, the harvest schedule maps developed for the wood supply analysis can be a starting point for the 5 year management planning process, especially the first two periods. The harvest schedule maps, if done correctly, can help reduce the work of the 5-year planning process. One point to note is that harvest scheduling is completed only for the Class 1 land base. The Class 3 AAC, for the most part, is opportunistic at best and is harvested only if extra effort is applied. It is not scheduled because of the uncertainty of obtaining extra funding for access and harvesting.

#### 3.4.4.3 Planning Horizons

Given the Province's commitment to long term sustainability of our forest resource, timber supplies were projected 160 years (equivalent to two forest rotations) into the future to ensure actions and strategies applied today will result in a sustainable forest in the future. Long term planning is fundamental in timber supply forecasting and ecosystem management as well.

#### 3.4.4.4 Operable Growing Stock Buffer

The Province imposed an operable growing stock constraint in the analysis to ensure the sustainability of calculated timber supplies. The constraint imposes a condition that in any period there must be a minimum operable growing stock of two times the harvest level on the landscape. In other words, for every hectare that is harvested another harvestable hectare must exist on the landscape. The requirement for a growing stock buffer is based on a number of factors. First, several of our non-timber objectives are not explicitly accounted for in our planning process and therefore will require a growing stock buffer to achieve them. Second, we are unable to follow optimum harvest schedules explicitly due to operational restrictions on harvesting. Third, the Province is not willing to assume high risk with the sustainability of the timber supply. For this reason a growing stock constraint of two times was used. This constraint was used in concert with harvest scheduling to help map out a reasonable harvest for the next 25 years.

#### 3.4.4.5 Targets for the Maintenance of Older Forest

Consistent with the Forest Service's ecosystem approach, the analysis an old forest target was introduced into the wood supply calculations requiring at least 15 percent of forests be older than 80 years. This was designed to provide a course filter approach to maintaining representative forest structure. It ensures the presence of certain amounts of old forest across the landscape into

the future. With advances in modeling, this target can be tracked across a district, a zone and on a provincial basis.

#### 3.4.4.6 Operability Limits

Operability limits are the time windows in which forest management actions such as harvesting can be undertaken with forest stands. Stand growth development as measured in stand merchantable timber volume and individual piece size of trees determine a stand's readiness for harvest. In some younger stands, one can have acceptable harvest volumes, but still have trees that are too small to harvest. In the 2010 wood supply analysis both stand volume and tree size were used to determine the earliest age when a stand could be initially harvested. In addition to determining the absolute earliest age a stand can be harvested, it was recognized that not all stands on the same site develop exactly the same at the same rate. A small portion of a stand will develop faster than other portions, with the bulk of the stand type representing the average condition.

#### 3.4.4.7 Silviculture

Silviculture is one of the main forest management tools available to forest managers when analyzing different future forests that are generated using the wood supply modeling software. The main silvicultural actions used in the 2010 analysis include; Precommercial thinning of balsam fir, black spruce, and softwood hardwood stands, and Planting of any areas that do not regenerate naturally mainly with either black spruce, white spruce and to a lesser with red pine, or Norway spruce and larch (both eastern and Japanese).

### 3.5 Inventory Adjustments

One of the limitations of the current wood supply model is the inability to account for volume depletions outside of what is reported for harvesting operations. The model produces a gross merchantable volume (GMV) figure, which requires adjustment to account for volume losses as a result of: fire, insects, disease, timber utilization practices and the presence of stand remnants.

#### 3.5.1 Fire

An estimate of productive area loss as a result of fire was based on an analysis of the historical fire statistics maintained by DNR.

#### 3.5.2 Insects

Forest Insect and Disease Surveys by DNR documented no forest mortality in FMD's 14 and 15 during the last five-year period. Long-term averages of area of timber mortality from insect defoliation were used as the deductions in Planning Zone 6.

### 3.5.3 Timber Utilization

Information for this adjustment was derived from a series of intensive on-the-ground surveys, which measured the amount of wood remaining on cutovers following harvesting. This wood was comprised of solid merchantable wood (logging losses) and wood with inherent cull (butt/heart rot). Information was analyzed by harvesting system and season.

### 3.5.4 Stand Remnants

Following harvesting operations, small fragments of stands often are left for a variety of reasons (operational constraints, low volume stands, terrain conditions). These often result in the inability of the operator to achieve volumes predicted by the computer models. A series of surveys were conducted across the province and the results analyzed to determine the amount of productive area attributed to remnants.

The total inventory adjustment for the CBPPL in the 2010 analysis was 18 %.

## 3.6 Results

### 3.6.1 District 14

Table 7 summarizes the result of the timber supply analysis for District 14. The class 1 softwood AAC increased from 81,400 m<sup>3</sup> in 2006 to 97,700 m<sup>3</sup> in the 2010 analysis. The main reason for this increase is the continued under cutting of the AAC over the past number of years. The class 3 softwood AAC dropped slightly from 18 000 m<sup>3</sup> to 17 300m<sup>3</sup>.

Table 7 Annual Allowable Cut results for CBPPL Land District 14.

	Aspatial Gross (m <sup>3</sup> )	Spatial Gross (m <sup>3</sup> )	Spatial Net (m <sup>3</sup> )
Class 1 Softwood	120 156	119 200	97 700
Class 3 Softwood	21 300	NA	17 300
Total Softwood	141 456	NA	115 000
Hardwood	2900	NA	2200

The hardwood CBPPL AAC for all land classes in District 14 is 2200 m<sup>3</sup> which represents a minor component in pure stands with the majority being residual.

### 3.6.2 District 15

Table 8 summarizes the result of the timber supply analysis for District 15. There is a decrease in the class 1 softwood AAC from 285 300 m<sup>3</sup> in 2006 to 249 300 m<sup>3</sup> in 2011. The main reason for this drop is the decrease in CBPPL landbase due to the last land sale to Crown. On the other hand an increase in the class 3 softwood AAC occurred from 16 900 m<sup>3</sup> to 47 100 m<sup>3</sup>. This difference is mainly due to the rationalization of the landbase. Overall the AAC change is mainly due to harvest scheduling (the difference between aspatial gross and spatial gross) as previously discussed.

The hardwood AAC for District 15 is 4 500 m<sup>3</sup> which represents a minor component in pure stands with the majority being residual. This is slight drop from the 2006 level of 5700 m<sup>3</sup>.

Table 8 Annual Allowable Cut results for CBPPL Land District 15.

	Aspatial Gross (m <sup>3</sup> )	Spatial Gross (m <sup>3</sup> )	Spatial Net (m <sup>3</sup> )
Class 1 Softwood	317 086	298 668	249 300
Class 3 Softwood	57 583	NA	47 100
Total Softwood	374 669	NA	296 400
Hardwood	5700	NA	4500

## Section 4 Values

### 4.1 Guiding Principles of Sustainability

There are five guiding principles of overall sustainability, which include; environmental, economic, political, social, and cultural sustainability.

Environmental sustainability looks directly at ecosystem health, both now and in the future. Ecosystem health is determined by such factors as ecosystem integrity, biodiversity, productive capacity, and resiliency. The five-year operating plan must ensure these factors are intact.

Economic sustainability demands that forest resources be managed and distributed efficiently and equitably among the stakeholders, within the capacity and limits of the forest ecosystem. Economic development has been given top priority by many of Newfoundland's people and their representative, the government. However, economic development should not proceed without the incorporation of the other factors into the decision making process.

Political sustainability refers to goals and management objectives being applicable, administrable, and practical. These goals and objectives must maintain these qualities well into the future with the aid of public input and support. Social sustainability means fairness and equity to all stakeholders. Applying Newfoundland's culture to the planning process attains cultural sustainability. A forest management strategy cannot be successful without allowances within the strategy for traditional access and use of the land. For generations, many of Newfoundland's public had free range in our pristine wilderness, a fact that cannot be ignored when planning for the zone. All are key interlocking components and each must be maintained if sustainable development is to be achieved.

## **4.2 Value Description**

The forest ecosystems of the zone provide a wide range of values to different individuals and groups. These include consumptive values such as timber products, hunting, trapping, sport fishing, and berry picking, and non-consumptive values like skiing, snowmobiling, hiking, and bird watching. Also, there are intrinsic and intangible values such as a feeling of wilderness and peace, which some people describe as spiritual. Although difficult to spatially describe or quantitatively measure, these spiritual values are considered to be a product or an accumulation of all values.

Other values such as water quality, parks and protected areas etc. provide for the protection of the forest ecosystems, which can enhance the other values listed above. Many of the values in the zone were identified by this or previous or planning teams. Presentations of pertinent information on each value by knowledgeable individuals or groups provided stakeholders with relevant information to make informed decisions. Other values, while not specifically outlined by the planning team, are also identified and discussed to provide a more complete description of the range of values found in the zone. The following represents a framework for characterizing values in a clear and consistent manner. This approach consists of three components:

### Characterization

- Description: Why the value is important, types of activities, intensity, spatial extent, employment, etc.
- Data in support: Statistical references.

### Critical Elements

- Forest Features: Elements at risk from harvesting or enhanced by harvesting (viewscales, adjacency to water, mountains, habitat, wilderness ambiance, road access, etc.)

### Guiding Principles

A guiding principle is defined as "a fixed or predetermined policy or mode of action". These 'modes of action' would be implemented in the five-year plan in the form of:

1. Policies that should be in place to protect or enhance the resource value;
2. Methods for negotiation or inclusion of other stakeholders in resolving potential conflicts;
3. Special management provisions/strategies - such as buffer zone consideration, temporal operating periods, modified harvesting, or a best management policy; and/or
4. Models and/or forecasting strategies to determine economic contribution, biodiversity impact, or community sustainability

Individual values were discussed both at the strategic and operational level. Strategic level information (characterization, critical elements, and guiding principles) is the focus of discussion in this section. They provide a mechanism to resolve conflicts that might arise throughout or after the five-year planning process. Where possible, the physical location of the value on the landscape (operational level) was also identified during the discussion of values. This helps facilitate the preparation of the five-year operating plan by identifying potential areas of conflicting use early into the process. In many instances, the Environmental Protection Guidelines (EPG's, Appendix 1) form the guiding principles for a value. Quite often the spatial extent or location of all values is not known (eg., raptor nests). Specific guidelines are still listed in order to provide a direction or course of action when and if these values are encountered.

## 4.2.1 Biotic Values

### 4.2.1.1 Big Game

#### 4.2.1.1.1 Moose

##### Characterization:

Moose are not native to the island. A pair was introduced to Gander Bay in 1878 and two pairs were introduced to Howley in 1904 (Northcott, 1980). Today, moose are distributed throughout the island and the population is estimated to be about 125 - 140,000.

Currently, moose are managed on an area/quota system in the province. The island is divided into 50 management areas and license quotas are set annually for each area. Quotas are set based

upon the management objective for each area (i.e., whether it is desired that the population increase, decrease or stabilize). Generally, if an area has too high of a moose population, managers will increase quotas to bring down the population in order to prevent damage to the habitat. However, if the habitat is in good condition, and the area could support more animals, future quotas may be increased. All or portions of moose management areas 5-13, 18, 19, 27 and 43 are located within the zone.

**Critical Elements:**

Harvesting is not expected to have a negative impact on moose populations in the zone because moose prefer the early seral stages of a forest and generally do well in areas after harvesting.

#### 4.2.1.1.2 Caribou

**Characterization:**

Caribou is the only native ungulate species on the island (Northcott, 1980). Biologists estimate that prior to the railway being built in 1898 the population on the island was approximately 100,000 animals but by 1930 the population had declined to about 2,000 animals (Murphy and Minty 1993). Between 1980 and 2000 the number of caribou has increased considerably on the island with a population estimated at 70,000+ animals. In the past few years however populations have declined significantly with Planning Zone 6 being no exception. All or portions of caribou management areas 61, 62, 63 and 75 are located in the zone. Core caribou areas 19 to 26 are located in the zone representing the Buchans, LaPoile and Grey River caribou herds.

**Critical Elements:**

Given that there is limited information about the distribution, movements, and habits of caribou in the zone, it is hard to determine what impact timber harvesting will have on these animals. Past studies have shown that forestry activities in the immediate vicinity of calving areas during the calving period have an impact on caribou populations. Recent studies and anecdotal information has indicated that the harvesting restriction zone around caribou calving zones may be significantly larger than first thought. It has also been shown that as roads are constructed and access is improved into remote areas, there is generally an increase in the number of animals which are killed due to road-kill and poaching. The abundance and distribution of arboreal lichens has also been shown to impact caribou populations.

#### 4.2.1.1.3 Black Bear

**Characterization:**

The black bear is native to the island and is found in forested areas (Northcott, 1980). Currently, the number of black bears occurring on the island is not known (due to difficulty in conducting a census) but is crudely estimated to be about 6 - 10,000 animals (Christine Doucette, Pers. Comm.). All or portions of black bear management areas 5-13, 18, 19, 27 and 43 are located within the zone.

#### Critical Elements:

- den sites for winter hibernation;
- forest cover

#### **Guiding Principles:**

##### Big Game Management Strategy (moose, caribou and black bear)

A planning process in which the Department of Environment and Conservation's Wildlife Division prepare a Big Game Management Plan annually accomplishes management of big game species in the Province. This process takes into consideration information provided by the public and wildlife and forestry staff. Each year the IFWD reviews all relevant data, such as recent census work, information provided on license returns, and jawbone or skull data and makes decisions on types and numbers of licenses of each species in each management area. Management of big game in the zone will continue to be addressed through this process.

##### Environmental Protection Guidelines

###### Moose

Where mature stands of timber required for moose shelter and moose yards are required, they will be identified in consultation with the Wildlife Division.

###### Caribou

- To ensure the continued protection of these animals the following EPG's will be followed during forestry activities;
- In areas where caribou utilize lichens, a minimum amount of lichen forest must be maintained for caribou. (This amount is to be determined through consultation with Wildlife Division);

Because the caribou population is in decline, the Wildlife Division in conjunction with forestry division and the paper companies has identified critical caribou habitat areas and have developed guidelines for forestry activities within these areas. These guidelines are located in a document

produced by Wildlife Division entitled *Forest Management Guidelines for Woodland Caribou for the Island of Newfoundland*. Highlights of these guidelines are:

- Plan primary roads and road corridors to avoid traditional winter and calving grounds if at all possible.
- Avoidance of sensitive periods will still be applied to all herds.

Operators should avoid an area during:

- i) calving period – May 15 – July 30
- ii) If caribou are encountered in an area operators should avoid disturbance or harassment of caribou, and contact the Wildlife Division.

## Bear

A 50-metre, no-cut, treed buffer must be maintained around known bear den sites (winter) or those encountered during harvesting.

### 4.2.1.2 Furbearers

#### Characterization:

Ten species of furbearers occur in the zone; lynx, red fox, beaver, otter, muskrat, short-tailed weasel, red squirrel, mink, coyote, and pine marten (will be discussed in more detail in next section). Of these, red squirrel, mink and coyote are not native.

#### Critical Elements:

- forest cover for protection;
- water quality maintenance;
- riparian buffer zones along aquatic areas;
- snags and coarse woody debris (denning, nesting sites, etc.)

#### Guiding Principles:

#### Fur Bearer Management Strategy:

The Wildlife Division, upon consultation with provincial trappers, Newfoundland and Labrador Trappers Association, general public, and departmental staff, develops recommendations concerning the management of furbearer species annually. Like the big game management plan, the fur management plan reviews the status of each fur bearer species annually and addresses the season dates and lengths, and if necessary closure of areas (or no open season). Management of all fur bearing species in the zone will continue to be managed through this process.

#### Environmental Protection Guidelines:

To protect beaver habitat, all hardwoods within 30 metres of a waterbody occupied by beaver are to be left standing during harvesting operations.

#### 4.2.1.3 Salmonid

##### Characterization:

The Atlantic salmon and the brook trout are native to the Island and are found in waterways surrounded by forested areas. There are numerous scheduled salmon rivers in Planning Zone 6.

##### Critical Elements:

- Water quality maintenance;
- Riparian buffer zones along water systems

##### Guiding Principles:

##### Salmonid Management (Atlantic salmon and brook trout)

The Federal Department of Fisheries and Oceans (DFO) deliver management of Atlantic salmon and brook trout in the Province. DFO annually sets bag limits, season dates and river closure dates based on extreme water temperature.

##### Protection

- DFO recommends that a 100 metre no-cut buffer zone be left in designated sensitive spawning areas.
- Under the Environmental Protection Guidelines designated protected public water supply areas (PWSA's) also provide protection for these species through existing Environmental Protection Guidelines that apply to these areas (i.e. increased buffers, usually 150 meters on intake ponds, 75 meters on main river stems, 50 meters on major tributaries and minimum 30 meter buffer regulated in the rest of the district).

#### 4.2.1.4 Song Birds

##### Characterization:

The distribution of songbird species in a forest ecosystem is widely considered to be a relative indicator of ecosystem health. Many songbird species are distinct to specific habitats (Whitaker et al., 1997) therefore; the presence, absence, or health of a specific songbird population can indicate the health of its corresponding habitat. Songbirds are also the natural predators of our native Lepidoptera pests (ie. looper and budworm) and help to control these populations. Consequently, their value cannot be underestimated.

#### Critical Elements:

- Forest cover for protection;
- Water quality maintenance;
- Riparian buffer zones along aquatic areas;
- Variety of forest seral stages and species (nesting sites, habitat, etc.)

Protection of songbird species will mainly involve protection of their habitat through the various methods discussed in earlier sections.

#### 4.2.1.5 Other Avian Species

##### Characterization:

Other valued avian species include ptarmigan, grouse, migratory birds and raptors. The former includes important game species, while the latter (ie. raptors) occupy higher trophic levels in the food chain. Higher-level trophic feeders are considered important indicators of ecosystem health, as they are sensitive to environmental stress. Population trends for these species as defined by the Wildlife Division and Canadian Wildlife Service (CWS) are available on a regional basis.

##### Critical Elements:

- Forest cover for protection;
- Water quality maintenance;
- Riparian buffer zones along aquatic areas;
- Snags and coarse woody debris (prey habitat)
- Buffer zones on nesting sites
- Under the Guidelines for Ecologically based Forest Management, no forestry activity is to occur within 800 metres of a bald eagle or osprey nest during the nesting season (May 15 to July 31) and 200 metres during the remainder of the year. The location of any raptor nest site must be reported to Wildlife Division. These guidelines are attached as terms and conditions to all commercial operator permits.
- The locations of all known bald eagle and osprey nests will be identified on all cutting maps and Forest Services Staff will inform harvesters of their locations. Regular operator checks and routine patrols of domestic cutting areas by Forestry Staff will ensure compliance of these guidelines.
- On recommendation by the CWS, sensitive waterfowl habitat has been protected through increased buffers of 50 meters on certain ponds. As well, the establishment of municipal wetland conservation areas in the planning zone by Eastern Habitat Joint Venture through stewardship agreements with municipalities.

#### 4.2.1.6 Rare and Endangered Species

##### 4.2.1.6.1 Pine Marten

##### Characterization:

Before 1900, marten ranged over most of the forested areas on the island. Unfortunately, due to a variety of reasons, the population levels dropped where this species was listed to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Endangered. Habitat loss, predation, disease and accidental trapping and snaring are thought to be primary reasons for marten population decline in Newfoundland. Marten still naturally occurs in three main areas on the island including: Main River watershed, Little Grand Lake and Red-Indian Lake areas. Additionally, marten also now exist at Terra Nova National Park (TNNP) and surrounding landscape. As well, in the Bay Du' Nord Wilderness Area around Lake St. John through a relocation effort by the Eastern Newfoundland Pine Marten Recovery Team. The population estimate today is approximately 300- 600 animals. Once listed as Endangered, COSEWIC has now downgraded the marten listing to Threatened.

Since the initiation of the live-trapping program, it has been revealed that the Main River watershed to the north of District 15 is a high-density marten area (on the island) and densities are comparable to those found in the Little Grand Lake and Red-Indian Lake areas. Based on this information, it is important that marten habitat be protected in these areas. Furthermore, it is important that some remnant stands of old growth (80+) forests be left throughout the zone and provision made to have connectivity (i.e., unbroken corridors of forest) between such stands. To accomplish this, a landscape approach to habitat management was initiated by the Forest Service in 1999. This involved working with stakeholders to identify critical or potential marten habitat, locating possible corridors, and identifying areas which would not be cut in the near future. This initiative has been ongoing since that time. To identify all factors affecting marten survival, stakeholders from the Forest Service, Wildlife Division and the paper companies sit on a recovery team for Newfoundland marten. The purpose of this team is to set short-term and long-term population goals for the species, and to recommend ways in which they may be accomplished. The team has identified critical and recovery marten habitat and is now determining which forest activities can take place within these areas.

#### Critical Elements:

- sufficient habitat to support a viable population of marten;
- areas of known marten populations remain closed to snaring and trapping

#### Guiding Principles:

The basic unit for evaluation will be home range size for male (30km<sup>2</sup>) and female (15km<sup>2</sup>). All forest types can be considered marten habitat if they meet the following requirements:

- sufficient habitat to support a viable population of marten;
- core marten areas remain closed to snaring and trapping
- 70% or greater of that unit must be suitable habitat;
- 40% or greater of the unit should have trees greater than or equal to 9.6m in height;

- The remaining portion of the 70% (30% or less) should have trees between 6.6 and 9.5m;
- 50% of the unit should be contiguous; Stands will have to be within 50 m of an adjacent habitat to be considered contiguous.
- A qualifying stand will have to be within 150 m of another stand or habitat patch to be considered as habitat.
- minimum patch size equals 20 ha;
- basal area requirement equals 40 m<sup>3</sup>/ha (~18 m<sup>2</sup>);
- hardwood stands (insect kill, wind throw) will be considered where crown closure is greater than or equal to 30%;
- Softwood scrub that meet the minimum requirements (6.5 m) will be considered habitat. Where height is not known, softwood scrub within 50 m and adjacent to a qualifying stand is considered as habitat

As stated, critical and recovery pine marten habitat is being or has been identified. The development and evolution of the marten habitat suitability model in recent years has been a useful tool in identifying potential marten habitat and evaluating impacts of harvesting on this habitat and resultant changes to population levels. Continued development and refinement of this model will provide more a reliable means of evaluating impacts of harvesting on marten habitat in the future. The Forest Service is a cooperative partner in this project and progress is closely monitored. There is also ongoing research into a variety of aspects of marten dynamics through the Model Forest, Canadian Forest Service, and University of Maine.

Early indications from Brian Hearn's work with the harvest schedule indicate that there is abundant suitable habitat in District 15 today and that the amount will increase over the next 10 years, even if the full harvest schedule is implemented. Work is now underway to extend this analysis to 20 years. The analysis also seems to suggest that snaring and trapping may be the main impediments to marten recovery.

Recommendations resulting from any of these ongoing initiatives will be incorporated into harvesting prescriptions as required.

#### 4.2.1.6.2 Red and White Pine Characterization:

Provincially, the range of white pine is shrinking due to a variety of reasons including past harvesting practices and infection from blister rust. However, significant numbers of white pine still exist in forest management districts of Planning Zone 6. Red pine is a rare tree species in the province with a distribution of some 22+ small stands (<15,000 trees in total).

**Critical Elements:**

- Maintenance or enhancement of stands on the land base
- Minimizing loss of trees/stands through public education
- Minimize losses to fire, insect and disease
- Enhancement of younger age classes through planting natural regeneration and pruning to ensure continuance of the species
- Maintenance of native genetic stock

**Guiding Principles:**

- Enforcement of forestry act, regulations, guidelines and policies
- Gene preservation gardens for these species and a cloned orchard for white pine have been developed by DNR at Wooddale Tree Nursery. At some point, the goal is to produce seed from these gardens/orchards to grow pine seedlings of native origin.
- Some native red pine stands are protected under reserve status.
- DNR has adopted a no cutting policy of pine by non-traditional users and a phase out of cutting by traditional commercial users. Currently, no commercial operators harvest pine in Planning Zone 6.
- Protection of these species in planning zone is expected to be strengthened by public education and no-cut conditions on permits (both domestic and commercial).
- Implementation of silviculture treatments designed to merge pine back into the landscape.
- DNR is collecting seed from red pine stands of native origin and the collection of white pine scions for the clone orchard at Wooddale
- DNR also implements stand level silviculture prescriptions such as pruning of immature white pine to reduce the infection rate of blister rust and cone production enhancement on red pine to ensure an adequate supply of native red pine seed.

**4.2.1.6.3 Red Crossbill**

The red crossbill is currently listed as endangered. The Newfoundland Forest Service currently has a representative on the recovery team for this species. Any recommendations on modified forestry activities, if any, will be developed with input from all members.

**4.2.1.6.4 Rare Plants**

**Characterization:**

Approximately 300 plant species, or about a quarter of all plant species on the island of Newfoundland, are considered to be rare and are known from 20 or fewer locations on the island.

Rare plants are often found in habitat types that are themselves rare or at least fairly restricted on the island. While the limestone barrens of the Great Northern Peninsula have garnered wide recognition as an important rare plant area, limestone barrens also exist further south along the west coast of Newfoundland, and other habitats with a high rare plant diversity exist on the central and southern west coast as well

The areas with limestone barrens include the western Port au Port Peninsula, and Table Mountain west of Stephenville. Although none of the three species listed federally and provincially as endangered occur south of Port au Choix, the southern limestone barrens nevertheless are rich in rare plant species, some of which are not found on the Great Northern Peninsula. For example, the only known locations of the Mackenzies's sweetvetch in Newfoundland are on the western Port au Port Peninsula.

Other rare plant hotspots include the following:

-The Bay of Islands region, especially the Corner Brook Area, which has abundant limestone.

While this area generally does not have large expanses of limestone barrens, open limestone cliffs, talus slopes and wetlands on limestone are abundant. The flora is somewhat similar to limestone barrens but the most arctic/alpine species do not occur in this area.

-The Stephenville Crossing/St. Georges River/Flat Bay area, has rare plants characteristic of salt marshes, coastal dunes, and shallow pond and river shores

-The lower reaches of Robinson's River, Crabbes River and Middle Barachois River host a variety of rare plants on river gravels and in the flood plain.

-The Codroy valley, which is warmer than most of Newfoundland and its complement of rare plants contains species characteristic of river floodplain and brackish estuary habitat, wetland species of the Coastal Plain element (distributed mainly on the Eastern Seaboard of North America), as well an arctic/alpine flora on barren mountain summits

-The Lewis Hills and Blow me Down Mountains, which have barren serpentine soils (rich in iron, magnesium and heavy metals) and support a special rare plant flora tolerant of these toxic conditions

-The Port aux Basques area harbours rare plants in sheltered stream valleys and coastal back dunes.

Most of the rare plant species throughout Newfoundland are inhabitants of fairly open habitats, such as river gravels, salt marshes, wetlands, aquatic habitats and barrens; all areas where no forestry operations are practiced. However, there are a number of rare plants that prefer or tolerate the partial shading found in forests. These are scattered throughout Districts 14 and 15, and often occur as single occurrences of rare plant species, rather than in groups of several rare species.

#### Critical Elements:

quarrying and road construction  
logging and extraction using heavy equipment  
mechanical site preparation  
all terrain vehicle traffic also poses a potential threat in some areas

#### Guiding Principles:

- To ensure that rare and endangered plant species present in the district do not become extinct because of forest management operations.
- To identify and protect rare plant habitat
- To educate department personnel and the public on the locations and importance of rare plants
- Encourage domestic harvesting in the winter
- Identify and update all rare plant sites on GIS forestry data base

- Ensure that areas containing rare plants are marked and posted
- Work with the Wildlife Division to develop mitigative measures in areas where rare plants occur.

#### 4.2.1.7 Water Resources

##### Characterization:

The protection of water resources has emerged as a major issue in recent years both nationally and provincially. Events such as the E.coli 0157 outbreak in Walkerton, Ontario, Newfoundland's Triahlo methane (THM) controversy, and numerous incidents of giardiasis in community water supplies have heightened public awareness on water issues. While much of the current focus is directed towards drinking water, it is also recognized that an equal importance must be attached to waters which have other beneficial uses. Human impacts both locally and globally have the potential to impair water for future uses.

In Planning Zone 6, water is used beneficially for numerous purposes. Most communities within the zone have water supplies. Thirty eight of these supplies are protected under the province's Protected Water Supply Program. Recreational waters within this zone are used for activities such as fishing, boating and as a water supply source for numerous cabin owners.

Human activity on the land has the potential to alter water quality and water quantity. Commercial forest harvesting is the predominant activity and occurs throughout the zone. Hydroelectric development has resulted in several river diversions. There is a vast array of roads associated with the harvesting and traditional access routes as well as newly constructed roads which dissect the unit. Mining operations within the zone are limited to mostly small quarrying operations associated with road construction. Some exploration activity for hydrocarbons, dimension stone and base metals has occurred sporadically throughout the region

#### Critical Elements:

Forest management activities such as road construction, use and maintenance, timber harvesting, and silviculture could potentially alter the quality of water draining from watersheds as well as other defining characteristics such as stream hydrology, sediment loadings, stream characteristics, and aquatic discharges from municipalities. Careless storage and handling of fuels by industrial and recreational users, stream diversions and agricultural operations are other examples.

#### Guiding Principles:

There are numerous protective measures listed in the Environmental Protection Guidelines under the broad categories of road construction, stream crossings, road abandonment, fuel oil handling and storage, support services and structures, harvesting, silviculture, and protected water supply areas. The EPG's are listed in their entirety in Appendix 1 and specific guidelines under the above sections can be found there.

### 4.2.2 Human Values

#### 4.2.2.1 Timber Resource

#### **Characterization:**

One of the major resource values of the forest ecosystem is the harvesting of timber to provide forest products. The market value of forest products harvested on CBPPL limits in Zone 6 is more than \$50 million and provides direct employment for approximately 240 employees from more than 50 communities. Historically timber has been harvested since the first inhabitants settled in the zone. Initial uses were mainly domestic in nature to supply timber to build houses, fishing sheds and equipment and for heating and cooking. With the increase in population, more commercial uses have arisen to supply lumber and pulp and paper products. The CBPPL portion of the zone supports an annual allowable cut (AAC) of both softwood and hardwood on CBPPL limits of 117 200 m<sup>3</sup> in District 14 and 300 900 m<sup>3</sup> in District 15.

Commercial logging contractors are allocated approximately 50 percent of the annual allowable cut on CBPPL limits in the zone. Commercial harvesting and sawmilling activity provides many

jobs in harvesting, sawmilling, trucking, pulp and paper manufacturing and related spin off industries for local residents. There are approximately 240 direct jobs created by the industry with an estimate of nearly twice that many in spin off industries.

Domestic harvesting still provides fuelwood to heat many homes and sawlog material for residential house construction in the zone. In fact, the easy access to domestic sawlogs and lumber is one of the reasons why this province has the highest rate of home ownership in the country. There are between 2800-2900 domestic cutting permits issued annually by the Crown which accounts for approximately 65 percent of the harvest on crown land. On CBPPL limits in Zone 6, the company issues approximately 500 domestic firewood permits.

Silviculture treatments are important to the forest resource of the zone because they ensure a vigorous and healthy forest is maintained. Forest renewal activities are critical because they ensure that the productive land base is maintained by planting areas that are not sufficiently restocked. Forest improvement activities help improve and enhance the growing stock which can reduce harvest cost, enhance forest product options and increase sustainable timber supply. There is approximately \$1.3 million spent on silviculture in the zone each year creating more than 40 seasonal jobs for CBPPL.

Timely access to timber is critical to planning any forestry operations. Primary, secondary and tertiary roads form an integral part of operating areas and are used after timber extraction is completed for silviculture and recreational purposes. In excess of \$450 000 is spent by CBPPL to construct forest access roads each year in the zone.

Protection of the forest from various disturbances is also a major characteristic of resource management. Because of the long insect history in the zone, protection through integrated pest management techniques is an important activity. While fire has not been a major disturbance, protection is still critical since a large fire can potentially be devastating. Protection of other resource values through modification of activities and enforcement is also important.

#### Spruce and Fir

Balsam Fir, white spruce and black spruce are the main saw log and pulpwood species within the province. Within this planning zone, balsam fir accounts for more than 90 % of the softwood harvest. Balsam fir is very important for its contribution to positive opacity properties of news print and is also excellent for lumber..

These species are managed for maximum sustainable harvest levels through the harvesting and silviculture strategies referred to later in section 6. Protection and long-term sustainability of these species will be achieved through strict adherence to AAC's and refinements to future wood supply analysis.

## White Birch

Traditionally, white birch has been a valued species for domestic fuel wood. However; it is now emerging as an important value-added species within the sawmilling and value added manufacturing industries of the province. It also has recently been researched for its ability to produce sap and the subsequent global marketability of this product. Additionally, white birch benefits the cycling of nutrients, the structure of forest soils, and can help in the reduction of insect infestations and in the decrease in spread rates of forest fires (Perry, 1994). White birch dominated stands comprise approximately 8% of the forested land base in the planning zone. With efforts to manage this species on a sustainable basis, in 2002 the first AAC's were developed for white birch and were refined in the 2005 wood supply analysis.

### Critical Elements:

The overall objective is to ensure the AAC is maximized while taking into account other resource values and conducting environmentally sound operations. This is achieved by:

- maintenance or enhancement of productive land base
- planting of non-regenerating areas
- minimizing loss of land base to other users
- minimize losses to fire, insect and disease
- timely access road construction
- enhancement of younger age classes through thinning to correct age class imbalance

### Guiding Principles:

- enforcement of forestry act, regulations, guidelines and policies
- minimize loss of productive land base through spatial and temporal compromises and continuous dialogue with other resource users
- education (staff, public, operators)
- aggressively conduct silviculture, access road, and protection activities
- implement best management practices. The *Environmental Protection Guidelines for Ecologically Based Forest Resource Management* outline courses of action and mitigative measures for forest activities. These EPG's are outlined in their entirety in Appendix 1 with some highlighted subject areas listed below.
  - garbage disposal
  - fuel storage
  - mineral soil exposure
  - buffer requirements
  - road and bridge construction
  - silviculture and harvesting activities

#### 4.2.2.2 Agriculture

##### Characterization:

There are 80-100 farms in the zone; the majority of which are located in the Humber Valley, Codroy Valley, and Bay St. George (Robinsons, Highlands Flat Bay) areas. These farms employ 250-300 people with gross farm receipts of \$15-20 million. Main commodities produced in the zone are dairy, vegetables, and greenhouse products. Other commercial items include fur, berries, eggs, hogs, sheep, beef, honey, and sods. Additionally, there are hundreds of subsistence farming plots scattered throughout the zone. The vegetables grown on these plots are used to supplement food requirements during the winter months. There are also several pastures and areas designated for hay production.

The wild berry industry (bakeapple, partridgeberry, strawberry, blueberry, and raspberry) plays a significant role in the economic picture for the zone. While there is no actual record of domestic production, thousands of kilograms of berries are harvested annually. These berries are sold locally and to travelling tourists.

##### **Critical Elements:**

Surveys indicate that approximately five percent of the soils in the province are suitable for agriculture. It is not possible to identify and plan all sites for future agriculture use and often there is a conflict with other land uses particularly forestry because these sites are of high growing capability. Although a suitable land base is the first critical element necessary for a successful agriculture operation, markets and the interest of individuals are also prime factors in the development and location of future farms. In the spirit of managing the ecosystem for multiple benefits, provisions must be given for the agriculture industry to expand. This is particularly important for areas outside established agriculture areas.

##### **Guiding Principles:**

Lands designated for forest management can include areas with high potential for agriculture. Consequently, the forest landholders will work with CBPPL and DNR to determine if opportunities exist for an exchange between agriculturally viable forest areas with unsuitable agriculture land within the Agriculture Development Areas.

The agriculture leasing policy initiated in 1976 ensures that new or existing land allocated for agriculture continues to be used for agriculture. The leases have no provision for fee simple grants and must be used exclusively for agriculture purposes

The following will provide guidance for the development of agriculture within the zone:

Home gardening leases should be confined to areas already developed for this activity.

Increases to agriculture leases should be adjacent to existing leases.

New agriculture leases should include a business plan approved by the Forestry and Agrifoods Agency of the Department of Natural Resources.

Wood harvested on agriculture leases shall be completed under a crown cutting permit.

Where possible, existing commercial forest operators should be encouraged to work with farmers to clear new land for development.

#### 4.2.2.3 Mining

Characterization:

There is a significant mining presence in the zone, particularly in District 14. Some of the major mines, past and present, have been located at Hope Brook, Agathuna, Lower Cove, and Flat Bay producing gold, gypsum, limestone, dolomite and aggregate. Smaller mines harvesting other products are located throughout the zone. In recent years, oil exploration has seen a number of sites developed with major exploration work using seismic lines occurring. There are also a number of active aggregate and quarry leases located throughout the zone. These are usually for very small areas which can be rehabilitated; thereby, minimizing their impact upon the forest ecosystem. Exploration activities continue to form a large portion of the activities in the zone.

Critical Elements:

To minimize the impact of mining and mineral exploration upon the forest ecosystem while providing a source of energy and aggregate material.

#### **Guiding Principles:**

- Ensure that quarries and open-pit mines are rehabilitated
- Ensure that the organic overburden is stockpiled and stored in a manner so that it can be used to rehabilitate the site.
- Avoid planning silviculture activity in areas adjacent to mines or quarries.
  - Every attempt will be made to extract timber harvested as part of oil and mining exploration and development.

- If timber can not be feasibly extracted using conventional means then timber shall be piled so that it may be extracted during winter months by snowmobiles.
- A mineral exploration company that proposes to explore or develop within a silviculturally treated area must carry out its exploration program with minimal disturbance and provide compensation as required
- This plan will not impede mineral exploration and/or development on mineral licenses within the planning area. Proposed harvesting activities are identified in the annual operating plan.

#### ***4.2.2.4 Historic Resources***

##### **Characterization:**

The provincial archeology office (PAO) is the agency responsible for the management and protection of archaeological sites and artifacts in Newfoundland and Labrador. This program is carried out under the Historic Resources Act which ensures that developments with potential to have adverse impacts on historic resources are investigated as and monitored by a qualified archaeologist through archaeological impact assessments.

Archaeological sites are non-renewable resources and play a vital role in understanding our heritage. It is important to professionally record as much information possible at an archaeological site in order that one may fully understand its history. In order to do this properly the site must not be disturbed. Very often, archaeological sites are small, spatially bounded units; therefore protecting these resources usually does not have an adverse impact on forestry activities.

Archaeological surveys have been carried out in several areas within the zone over the years, however many areas still remain to be surveyed. To date there are 120 known archaeological sites within the zone which are protected under the Historic Resources Act. These sites show evidence of Maritime Archaic Indian, Palaeoeskimo, Beothuk, Mi'kmaq and European occupation. There is potential for other historic resources to be found in the zone.

Archaeology projects provide many seasonal jobs and many of these people are successful in obtaining employment in archaeology and conservation for longer periods of time. By calling for archaeological impact assessments on projects which have potential to negatively impact historic

resources the PAO is providing jobs for consulting archaeologists in the province. New businesses are created as a result of archaeological projects. These businesses include bed and breakfasts, boat tours, restaurants and gift shops. Presently, there is no active archaeology within the zone and there are no developed archaeological sites which would attract tourists.

Critical elements:

Major threats to historic resources are projects involving activities which disturb soil layers and/or provide unintended public access to the archaeological resources. Forestry activities such as construction of access roads and bridges, harvesting, mechanical site preparation and regeneration have the potential to destroy historic resources.

While forestry activities can have adverse impacts on historic resources there are also beneficial effects. Where impact assessments are carried out and new sites found, it adds to our understanding of Newfoundland and Labrador's heritage. When archaeological sites are discovered through impact assessments these resources are protected from damage or destruction and preserved.

### **Guiding Principles:**

Any project involving land-use has the potential to adversely impact historic resources; therefore it is important that the provincial archaeology office be involved at the planning stage in order to ensure that mitigative measures to protect historic resources are developed at the earliest possible time.

In order that known archaeological sites and potential unknown sites are protected from forestry activities buffer zones will be necessary in some areas whereas archaeological assessments may be required in others. Known archaeological sites must be avoided and buffers will be required around them. Buffers will also be required along all rivers and ponds, as well as along the coastline where there is potential for archaeological resources to be found.

Occasionally there are accidental discoveries made of historic resources. In the event that this does happen, activities should cease in this area and contact be made immediately with the provincial archaeologists at 729-2462.

#### ***4.2.2.5 The Greater Gros Morne Ecosystem***

##### **Characterization:**

The primary role of Canada's national parks is to maintain ecological integrity. Although enshrined in policy for many years, this role has recently been given prominence in legislation by the passing of the Canada National Parks Act in October 2000. The Report of the Panel on Ecological Integrity of Canada's National Parks (February 2000) noted that parks all across the country (including GMNP) are under threat from stresses both within and outside the national parks. Ninety percent of forested parks are under stress from external forestry activities.

The primary challenge for national parks in maintaining their ecological integrity is that most parks are part of larger ecosystems and the area set aside for the parks is not large enough to protect the full integrity of that ecosystem. Large-scale changes on the landscape surrounding parks can isolate the park ecologically creating an "island". Parks Canada must work with adjacent land managers in striving to achieve its mandate.

Biodiversity goes beyond the range of wildlife and plant species to include the range of habitats and landscapes. Loss of special habitats such as the old-growth forest and associated species may impair the ecological integrity of GMNP in ways that are not currently understood. While ecological integrity has prominence regarding the management of national parks, legislation and policy dictate broader responsibilities for national parks. These include providing opportunities for Canadians and others to have high-quality experiences in a natural setting. Currently, 61 percent of GMNP is classified as Zone II - Wilderness. The southwestern portion of this zone borders on District 15. The Long Range Traverse, a 3-4 day hike within GMNP, currently has a reputation as a high-quality wilderness experience due to its remoteness and difficult access. Increased access, as a result of forestry operations can threaten this wilderness quality. The presence of the endangered Newfoundland pine marten has been noted in the northern and southern areas of the park. Those sighted in the south are not closely connected with a core population and are likely "dispersers" from either the Little Grand Lake/Red Indian

Lake or Main River populations. Habitat connectivity with these other core populations may be critical to long term survival of marten in GMNP.

**Critical Elements:**

- to maintain ecological integrity:
- to maintain native biodiversity and natural processes.
- to maintain viable wildlife populations

**Guiding Principles:**

The long-term effect on the park's ecological integrity can rarely be isolated to one cause and is more often due to the effects of many activities. For that reason it would be important to assess the cumulative environmental effects of all activities as part of the forest management planning process.

- maintain species composition as well as the age structure and ecological functions of the various forest-types across the landscape over the long term.

- maintain proportion of interior forest (mature forest >250 m from an “edge”)

- maintain landscape connections between the park and the surrounding landscape. This would require effective, permeable movement zones between populations and/or critical habitats.

- ensure landscape characteristics are maintained that allow marten to achieve their habitat requirements at the landscape scale. This could mean ensuring forest management practices allow for a continuous distribution of marten habitat and home ranges to the park boundary. A conservative approach that preserves future options should be adopted until the marten guidelines are fully developed.

#### 4.2.2.6 Newfoundland T’Railway

**Characterization:**

A large section of the Newfoundland T’Railway Provincial Park lies in the zone and has an impact on forestry operations. The former CNR right of way, which is 25 feet each side of the center line, is the main route for the T’Railway with some minor deviations. It provides for an all season, multi-use recreation corridor developed and managed with community partners to maximize adventure tourism and recreational opportunities.

The T’Railway is protected for the present and future enjoyment of the public as part of the system of provincially designated parks and natural areas. The Provincial Parks Act provides the legislative framework for the administration and management of the T’Railway.

The T'Railway constitutes the province's contribution to the Trans Canada Trail System. It is the largest provincial park in the province with the most users. It is used primarily for snowmobiling, skiing, hiking, walking and all terrain vehicle usage. Other new or historical uses such as commercial and domestic harvesting, quarry and mining access and cabin access are also permitted with a special permit.

#### Critical Element

- protection of the historical landscape integrity of the T'Railway corridor
- preservation of the scenic quality along the corridor
- control of land usage adjacent to the T'Railway

#### Guiding Principles:

- coordination of activities with various other agencies responsible for land management outside the T'Railway corridor to ensure that the integrity of the park is maintained
- coordinate and build partnerships with other stakeholders and user groups such as communities, industry and recreational organizations for the long term maintenance and development of the T'Railway
- in an attempt to preserve the natural value of the T'Railway, other land management agencies are requested to maintain a 100 m buffer along the right of way and to consider viewsapes in their harvesting and development plans if possible.
  - where access is required from the T'Railway, all roads shall be 100 meters away from the track before a landing or turnaround is constructed.
  - where feasible, harvesting using the T'Railway shall be from May to December to avoid conflict with other user groups.

#### 4.2.2.7 Parks and Protected Areas

##### Characterization:

The mission statement of the natural areas program is to protect in an unimpaired condition, large wilderness examples of provincial ecoregions including their natural processes and features and rare natural phenomena, so as to preserve the diversity and distinctiveness of the province's ecologically sustainable future for the benefits of present and future generations.

Protected areas in the province are of many types. The *Wilderness and Ecological Reserves Act* enables the province to establish the following; wilderness reserves (Component 1), ecological reserves (Component 2) and ecological reserves (Component 3). Component 1 reserves are defined using the critical habitat of high level, wide ranging species i.e. caribou. They generally cross ecoregion boundaries, protect complete systems and are large (> 1000 km<sup>2</sup>). Component 2 reserves protect representative samples of ecoregions (not included in Component 1 reserves)

and are mid-sized (50-1000 km<sup>2</sup>). Component 3 reserves protect exceptional natural features, such as, rare species or areas of unusual biological richness and are generally small (< 10 km<sup>2</sup>).

The benefits of protected areas are to preserve biodiversity, provide areas for scientific research, provide opportunities for environmental education and provide standards against which the effects of development can be measured.

Proposed protected areas in the zone include; Browmore Bog with an alternate area at Journois Bog which protects the dome bog feature representative of the St Georges Bay Subregion of Western Newfoundland Forest Ecoregion, Cape St John which is representative of the Codroy Subregion of the Western Newfoundland Forest Ecoregion, Garia Bay which is representative of the South Coast Barrens Subregion of the Maritime Barrens Ecoregion,(there is an informal alternate area proposed near Barachois/Flat Bay Brook which also protects a forested component of the St Georges Bay Subregion) and the Port au Port Peninsula with an alternate at Table Mountain, which protects the limestone barrens, in the Port au Port Subregion of the Western Newfoundland Forest Ecoregion. A component III reserve is also proposed at Eastern Tolt to protect the wave forest. Other protected areas include the T’Railway and Little Grand Lake public, wildlife and ecological reserves. Major parks include Gros Morne National Park, and J. T. Cheeseman, Sandbanks, and Barachois Provincial Parks.

Critical Elements:

- preservation of biodiversity
- maintenance of protected area integrity
- maintain natural processes and features

Guiding Principles:

- only allow traditional (hiking, berry picking, hunting etc.) activities, educational activities and scientific research within protected areas provided that they do not compromise the integrity of the reserve
- prohibit all forms of new development such as mining activity, hydroelectric projects, forestry activity, agriculture activity, roads and trails and cabins and new structures.

#### ***4.2.2.8 Outfitting***

**Characterization:**

The outfitting industry has been an integral component of the tourism industry on the southwest coast since the early 1900’s. This region has always been a popular hunting and fishing destination because of the pristine environment and abundance of fish and wildlife species. There

are approximately 40 outfitters operating within the boundaries of the zone with over 70 main or line camps. These operations provide seasonal employment for many local individuals.

There are in excess of 300 big game licenses assigned to outfitters in the zone.

An economic impact study conducted in 1995 by the Department of Industry, Trade and Technology suggests that a big game license has a net economic impact of \$6864. By approximating this value at \$7000 for 2008, it can be seen that big game alone has a significant impact on the local economy. The many trout and salmon destinations in the zone also make fishing an important economic contributor.

Over the past 10 years, a significant number of traditional hunting and fishing facilities have diversified into the non-consumptive areas of the tourism industry. Such activities include but are not limited to: snowmobiling, dog sledding, kayaking, canoeing, nature viewing, hiking, and wildlife photography. The ability to diversify has positively impacted the viability of outfitting operations and as such, increasing numbers of operators are considering these opportunities. Diversification can lengthen seasons of operation, increase and lengthen employment, and reduce dependency on a single sector of the tourism industry. Pristine wilderness settings are necessary for many of these types of diversification.

### **Critical Elements:**

Remote outfitting camps are dependent on their remoteness. Forest access roads inevitably impact the ability of a camp to maintain its remote status. Increasing accessibility through increased access roads can also lead to increased hunting and fishing pressures in a given area. This can in turn lead to decreased success rates of tourists. This is of particular concern since Newfoundland is often the hunting destination of choice due to success rates upwards of 80 percent. An increase in access roads also tends to lead to increased cottage development that in turn can have an impact on both remoteness and game availability.

Removal of large areas of forest has the immediate effect of destroying big game habitat, particularly winter cover, although this impact has been poorly studied (particularly in remote areas). Forest harvesting also has the ability to impact negatively upon travel corridors, bear denning areas, and caribou feeding and calving areas.

While clients of big game and fishing outfitters are primarily interested in hunting or fishing experiences, they also show a great respect and admiration for pristine conditions and a healthy looking landscape. The landscape view experienced by clients plays a large role in leaving a lasting impression of the province. The view also has a direct impact on repeat client bookings and recommending the destination to others. Viewscapes become even more important once outfitters begin diversification into non-consumptive tourism activities. With these activities, there is no trophy to bring home and that which is taken away is that which has been experienced by the senses.

In some cases, past harvesting practices has resulted in increased levels of garbage (skidder tires, abandoned buses, heaps of oil containers, etc.). This can be frustrating for outfitters who concentrate on not leaving permanent marks on the landscape. Possible erosion caused by hillside logging and heavy equipment use is also a concern - particularly due to its possible effects on water quality for fish habitat.

### **Guiding Principles:**

It is necessary that no harvest buffer zones be left around outfitting camps that are agreed to by all parties involved. Buffer zones can be difficult to negotiate due to varying ranges of activity from operator to operator. Some operators make use of areas that are 8-10 kilometers away from their camps.

- consideration should be given to decommissioning roads and bridges (where possible) after harvesting and silviculture is completed. This will eliminate damage to the hunting area by reducing the possibilities of increased hunting pressure. When roads are in use actively for harvesting purposes, access to hunters should be restricted or limited.
- harvest in the winter whenever possible. Winter roads are less passable in summer and fall and will help to reduce traffic. These roads will also be cheaper and easier to decommission.
- construct new roads as far away from existing outfitting camps as possible. The benefits of this are obvious. Harvesting should be restricted around hunting and fishing camps during their season of operation. At these times, harvesting should occur as far away as possible from outfitters.
- forest operations should be carried out in compliance with existing regulations
- efforts should be made to ensure that the integrity of the view from outfitter cabins is maintained when conducting forest operations.
- forest operations should ensure that whatever is brought into an area is removed from the area once harvesting is complete.

#### ***4.2.2.9 Recreation***

### **Characterization:**

Southwestern Newfoundland has outstanding scenery, interesting topography, and opportunities for viewing wildlife and flora in a natural setting. These elements represent a small list of

reasons why the zone is used extensively for recreational purposes. Hiking, skiing, canoeing, and snowmobiling are major recreational activities in the area. Non-timber recreational values are expected to play an increasing role in forest management practices.

Canoeing and kayaking around the coastline and on the many rivers, the hiking trails (especially the Appalachian Trail), numerous ski and hundreds of kilometers of managed, groomed snowmobile trails, and excellent hunting, fishing and adventure tourism areas highlight some of the recreational opportunities in the zone.

### **Critical Elements:**

#### Wilderness

Backcountry recreational activities are dependent on the existence of natural pristine wilderness areas. The temporary removal or alteration of this pristine wilderness through forest harvesting practices will result in a decrease in these recreational activities for some period of time.

#### Accessibility

An increase in forest access roads will inevitably increase the amount of accessibility to remote areas. This in turn will increase the amount of traffic in an area (both vehicular and pedestrian) and decrease the value of the experience for many recreational activities.

#### Viewscapes

The majority of individuals who are involved in recreational activities are concerned about viewscapes. Many of the recreational activities occur because of a particular viewcape. The destination for many individuals is a result of the viewcape in that particular region.

### **Guiding Principles:**

To prevent negative ecological effects and to ensure a positive experience, access and levels of recreational activities can be monitored. Public surveys can be used to measure the experiences and the levels of recreation occurring in the zone.

#### Wilderness

Forest operations should attempt to avoid wilderness areas where high concentrations of recreational activities occur. If operations are necessary, stakeholder meetings could prevent conflicts through temporal scheduling.

#### Limiting Accessibility

Decommissioning of forest access roads could be a possible option when harvesting operations are completed. Harvesting should be conducted using winter forest access roads where possible. Winter roads create less traffic and require less effort to decommission.

## Viewscape

In areas where high concentrations of recreational activities occur, aesthetic views should be maintained using landscape design techniques where possible, when conducting forest operations. This is especially relevant in areas where the recreational activities are occurring because of the aesthetic view. Reforestation of areas with high aesthetic values should occur without delay in returning the site to a forested condition.

### 4.2.2.10 Tourism

#### Characterization:

The tourism industry in Newfoundland and Labrador is based on our natural and cultural resources. Protection of these resources is critical for our industry to survive and grow. We currently have the resources to compete internationally with tourist destinations; however, competition for the international traveler is high in the tourism marketplace. The tourism industry in Newfoundland and Labrador has experienced significant growth since 1997. Tourism has been contributing between \$580 million and \$700 million annually to the provincial economy. Government tax revenue from tourism in 1998 was estimated to be \$105 million and continues to increase. The worldwide growth of tourism at rate of 41 percent, the national growth of 25 percent and the provincial growth of 33 percent indicates tourism is Newfoundland and Labrador's best opportunity for economic diversification and growth.

There are many excellent tourist destinations in the zone. Gros Morne National Park and J. T. Cheesman, Barachois and Sandbanks Provincial Parks, Rose Blanch Lighthouse, and Captain Cook Lookout are just a few examples of the more formal and prominent tourist attractions. Many tourists also come for the outdoor recreational opportunities or to partake of the excellent scenery.

#### Critical Elements:

- viewscape
- accessibility
- wilderness ambiance
- remoteness

## **Guiding Principles:**

Work with GMNP, provincial parks, tourism division and tourism operators as required to implement strategies to minimize the visual impact of harvesting operations on the aesthetic values associated with viewsapes. By bringing together GMNP, CBPPL, NFS, and the tourism operators, strategies will be discussed, negotiated, and implemented to provide a balance between harvesting and the values associated with tourism. If required, the Forest Service, CBPPL, local Town Councils, Parks Division and other relevant groups will get together to examine the viewshed issues where applicable in the zone.

## **Section 5 Public Consultation Process**

### **5.1 Planning Objectives**

In recent years, there has been a shift from single resource management to a more comprehensive technique of forest ecosystem management. In its attempt to provide the greatest good for the greatest number of people for the greatest period of time, sustainable forest management (SFM) must be balanced in light of social, economic, and environmental issues. In the context of SFM this shift has resulted in a move from the traditional, narrow focus of timber management to incorporate non-timber values into the management planning framework. Another term that has become closely associated with SFM is “sustainable development.” Sustainable development, or in this case “sustainable forests”, not only takes into account the social, cultural, economic, and environmental benefits of the present, but those of future generations also.

The Forestry Act of 1990 outlines its approach as providing a "continuous supply of timber in a manner that is consistent with other resource management objectives, sound environmental practices, and the principle of sustainable development."

In the 1995 Environmental Preview Report the Newfoundland Forest Service has proposed an adaptive management planning process. This process has three objectives.

1. Establish a productive planning framework to include all stakeholders. An effective planning framework must have information and issues defined at the beginning of the process.
2. Learn more about forest ecosystems while they are being actively managed (i.e., adaptive management). Adaptive management incorporates strategies which help us to learn about the forest ecosystem and to deal with uncertainties.

3. Establish an ecosystem approach to forest management which integrates the scientific knowledge of ecological relations and limits of growth with social values. This will help to attain the goal of sustaining natural ecosystem integrity and health over the long term.

Adaptive management makes decisions based on input from all the stakeholders involved, and it establishes a continuous learning program. The adaptive approach allows us to communicate, share information and learn about forests being managed. This sharing of information, both old and new, then provides the flexibility necessary to adjust to changes and to set new goals. Such interaction is an absolute necessity for a subject as complex as an ecosystem.

## 5.2 Planning Framework

As previously stated, this plan is being written for CBPPL limits in Planning Zone 6 and not a specific district. With previous planning processes there were planning teams set for each district. A strategy document was prepared for the entire district and separate five year operating plans were prepared for each owner within the district. Due to the specific issues in the zone and the geographic separation of the main centers in the districts it was initially decided to hold meetings separately in Stephenville and Corner Brook.

## 5.3 Planning Team Participation

An initial advertisement was placed in local and regional newspapers, notices were posted in prominent locations in most communities in the zone, and an extensive email to interest groups and individuals was done to inform potential participants of initial meetings in Stephenville and Corner Brook. A listing of all invitees and the interest group they represent is listed in Appendix 2. The initial meeting was designed to inform attendees of the change in the planning framework as a result of the new legislation, the ground rules for participation, and to form the new planning team for the zone. Attendance at these meetings was extremely poor, however, with a few exceptions; attendees were common to both meeting locations. A planning team was formed and it was decided to combine both processes and hold meetings in Corner Brook since many of the same stakeholders were involved. A list of planning team members and their affiliations is shown in Appendix 2. Planning team membership was not restricted to those listed and was open to anyone who wanted to join the process at any time.

A planning team meeting was then held in Corner Brook and it was well attended by the stakeholders that turned out at the first set of meetings but no additional stakeholders attended. At this meeting, a first draft of five year plan maps were posted and discussed at the meeting for both CBPPL and Crown limits. Some concerns were raised by participants and it was agreed that they would be addressed at a separate meeting between CBPPL and the Tourism representative.

At this second planning team meeting, a representative of CBPPL spoke to the group to inform them of the 3 EMS certifications held by CBPPL and briefly what each covered. The group was made aware that more specific information would be made available upon request. The CBPPL representative also spoke on the issue of the need for a conflict of interest process to address occasions when team members other than a specific land use stakeholder (not including CBPPL

or DNR) may be in a personal conflict of interest situation on a particular matter before the planning team. In such an occasion, the person or group with the personal conflict should remove himself from the final decision. There was general agreement from all at the meeting. It was suggested by a DNR representative that CBPPL write a letter to the person at DNR responsible for modifying the planning team ground rules to suggest this addition. This was done in April of 2013. As well, there was no interest in identifying values for presentation and discussion at subsequent meetings. This lack of interest in the process left organizers in a dilemma on how to garner input from stakeholders. It was decided to contact the major stakeholders individually to identify and characterize their values. The major stakeholders contacted by CBPPL were the Wildlife Division, Department of Tourism and Parks and Natural Areas.

Several meetings were held with Tourism, Parks and Natural areas and Wildlife as well as individual meetings with every outfitter within the zone as per a list provided by Tourism. Agreements were reached with all parties except Tourism on viewscape concerns only. These agreements which successfully mitigated their concerns were reached prior to submission of the plan to Environmental Assessment.

As stated above, the only issue which could not be resolved prior to submission to EA was that of viewsapes with Tourism. CBPPL met with representatives of Tourism on at least 6 occasions and was making progress to narrow their concerns from that of a global “ no cutover seen from anywhere along the TCH” to a site specific prescriptive approach. However at our last meeting before the EA submission deadline, a compromise could not be found.

This stakeholder input, along with CBPPLs draft 5 year plan harvest schedule along with the harvest schedule was used to identify our second and final draft of our plan. This final harvest schedule was combined with proposed road construction, silviculture activity information and this five year plan background document for submission to the environmental assessment process. A list of stakeholders that were contacted and/or sent GIS data or maps is shown in Appendix 2.

Changes to harvest areas or processes to follow to resolve conflicts, where possible, were ongoing throughout the limited planning process and are reflected in the final operating areas presented in this plan. These changes or modifications to areas or processes that were established will be discussed in later sections.

Every attempt was made to garner input from a wide range of groups and individuals. It is very disheartening however, that despite numerous attempts, little interest was shown.

## **Section 6: Corner Brook Pulp and Paper's Environmental Management Systems**

CBPPL is certified to three different environmental management systems (EMS). These systems are how we ensure that we operate in a sustainable and environmentally friendly way. The following is a brief description of these 3 systems and how they interrelate.

### **ISO 14001:2004**

The first EMS that CBPPL was certified to is ISO 14001 in 2001. The ISO 14001 Standard, a standard that incorporates environmental aspects and continual improvement into all forest operations. EMS applies to all Woodlands operations controlled by the Company including management planning, road construction and maintenance, harvesting operations, transportation of fibre, silviculture, and support services.

Our ISO 14001 EMS focuses on the management of six critical areas:

- Water quality
- Soil protection
- Fibre utilization or recovery
- Fuel and oil storage
- Maintenance of visual quality
- Waste disposal

Under ISO 14001:

ISO defines our environmental objectives and establishes processes to achieve them and to monitor them for progress

Ensures that we have an environmental management system (EMS) in place which meets world-class standards

Ensures that we meet or exceed all legislation and all environmental guidelines or policies related to our operations

Very strong requirement to demonstrate continual improvement

Requires a significant level of training and commitment from all employees

Emergency preparedness is very important and emergency response tests are conducted on all operations

### **CAN/CSA Z809-2008**

The second standard that CBPPL was certified to is CAN/CSA Z809 in 2003. A major strong point of the CSA Standard is the involvement of the public in the planning of forest management activities. As mentioned before, this is something CBPPL has already incorporated into their planning process. The public identifies forest values of specific importance to environmental, social, and economic concerns and needs. Another benefit of the requirements of this Standard is providing a link between local level sustainable forest management and forest policy on a

provincial and national scale. This is accomplished through the use of the Canadian Council of Forest Ministers (CCFM) Criteria and Elements for sustainable forest management, which identifies local forest values across Canada. This Standard identifies 35 required core indicators under these criteria and elements. The Standard also deals with performance, by allowing the public to set targets at the local level, to which the organization will be held accountable. Finally, the CSA Standard requires a system to ensure that both the public participation and performance requirements are satisfied (CSA 2008).

Under CSA Z-809:

- Ensures that our forest management activities are conducted in a manner which is sustainable
- Ensures that we maintain and enhance the long-term health and biodiversity of our forest
- Ensures that we balance the economic benefits of our forest with social and cultural values sought by other stakeholders
- Ensures that processes are implemented for monitoring progress towards achieving objectives
- Ensures that public input is sought in the establishment of values, objectives, and targets that we want to achieve

### **Forest Stewardship Council (FSC) – National Boreal Standard**

The third standard that CBPPL was certified to is FSC in 2012. The Forest Stewardship Council is an international non-profit organization that was founded in 1993. It's international Boreal Standard was developed in 2004 and consists of 10 principals and 56 criteria with many indicators and verifiers. The is the most recognized and stringent international standard for woodlands operations worldwide.

The Vision of FSC is: “Healthy forest providing an equitable sharing of benefits from their use while respecting natural forest processes, biodiversity, and harmony amongst their inhabitants”.

The Mission of FSC is: To promote environmentally-appropriate, socially-beneficial, and economically-viable management of the forest of Canada through standards and their application

More information on our EMS programs is available upon request.

One very important item under our FSC certification is what is known as “High Conservation Values” (HCV). This is a list of rare or endangered plants and animals that are known to be at risk on our limits. This list was compiled by a committee of experts. Now that we have identified this list CBPPL is working with this committee of experts to develop management strategies to protect all of these species. The current HCV list is as follows.

## High Conservation Values on CBPPL Timber Limits

<p>Habitat for:</p> <p>Newfoundland Marten, Woodland Caribou, Harlequin Duck, Barrow's Goldeneye, Peregrine Falcon ssp. <i>Anatum</i>, Piping Plover, Red Knot, Rusty Blackbird, Short-eared Owl, Banded Killifish, American Eel, Laurentian Dandelion, Rock Dwelling Sedge, Serpentine Stitchwort, Tradescant's Aster, Boreal Felt Lichen, Other S1-S3 Species, Atlantic Salmon, Freshwater Fishes</p>
<p>Red Pine and Red Pine Stands at Sandy Lake, Birchy Narrows, and Birchy Lake,</p> <p>White Pine</p> <p>Black Ash</p> <p>Yellow Birch</p>
<p>Ducks Unlimited Conservation Areas:</p> <p>Cook's Marsh,</p> <p>Upper Humber Wetland Complex (Birchy Basin)</p>
<p>The following Provincial and Federal Parks and Reserves:</p> <p>Gros Morne National Park, West Brook Ecological Reserve, Little Grand Lake Ecological Reserve, Little Grand Lake Wildlife Reserve, Middle Ridge Wildlife Reserve, Flatwater Pond Provincial Park Reserve, Jonathan's Pond Provincial Park Reserve, Barachois Pond Provincial Park, Sir Richard Squires Memorial Provincial Park, T'Railway Provincial Park</p>
<p>Intact Forest Landscapes (includes old growth)</p>
<p>Grand Lake South White Pine Area</p>
<p>Serpentine Areas, Limestone Areas</p>
<p>Riparian Areas</p>
<p>Public Water Supply Areas (PWSAs)</p>
<p>Slopes Greater Than 25° (46%)</p>
<p>Recreation: access the wilderness for hunting, fishing berry picking; access to cabins for pleasure, relaxation and hunting</p>
<p>Income from working in the forest; Sawlogs for local sawmills</p>
<p>Cutting timber for wharves, stages, and boats</p>
<p>Firewood to heat homes and businesses</p>
<p>Aboriginal Burial Sites, Sacred and Spirit Areas, and Medicine Plants</p>

Another new initiative from our FSC certification is the need to have a formalized “Forest Vegetation Pest Management Plan” (PMP). This PMP describes the vegetation management process used by CBPPL. The PMP is to be used by CBPPL staff and contractors when assessing and conducting vegetation management treatments, while considering the obligations of the Forest Stewardship Council’s (FSC) National Boreal Standard and other applicable forest management plan commitments. Forest insect pest management is the responsibility of the provincial government.

A silviculture treatment that involves the potential use of herbicides considers economic, environmental, and social concerns. CBPPL’s silviculture goal is to establish healthy stands of ecologically-suited commercial tree species that take advantage of the site’s growth potential. Vegetation management is an integral part of meeting CBPPL’s legal requirements to regenerate stands after harvest, and CBPPL’s vegetation management strategy includes using herbicides where appropriate, and as permitted by this PMP.

## **Section 7 Management Objectives and Strategies**

The overarching goal is to manage the forests of the zone in a sustainable manner. The *Provincial Sustainable Forest Management Strategy 2003* defines sustainable forest management as:

**"to maintain the long-term health of forest ecosystems while providing ecological, economic and cultural opportunities for the benefit of present and future generations."**

Specific objectives and strategies employed to work toward achieving sustainable forest management are outlined below.

### 7.1 Harvesting

As previously stated, the forest in the zone is part of the boreal forest which is characterized as being disturbance driven resulting in the formation of relatively even aged stands. The clearcut silvicultural system most closely emulates this natural disturbance pattern and therefore is the most preferred method employed for harvest. The size, shape, arrangement and juxtaposition of clear cut areas vary across the landscape depending on localized topography and terrain conditions. A modification of the clearcut system takes place in domestic areas whereby the cuts

are relatively small and disbursed resulting in the creation of a range of age and development classes.

### 7.1.1 Commercial

Section 3 outlines in some detail the general approach for the timber supply analysis and specific results and sensitivity analysis for both districts in the zone. The model used to calculate the wood supply is a maximization model which outlines a specific course of action and timing of such action to maximize timber production. The harvest schedule indicates the specific forest strata to be harvested and the timing of such harvest. The districts must follow this schedule as closely as possible in order for the AAC to remain valid.

In general, the oldest timber that is in the worst condition and losing volume fastest is targeted as first harvest priority. Younger stands that have been damaged by insects and disease may also receive high priority. Once managed stands are eligible for harvest, this priority may change in some cases to allow for a faster rotation on good sites that are silviculturally treated.

There is an insufficient supply of timber on Crown Land, particularly sawlogs, to supply the current sawmill industry. To help alleviate this problem the Crown has negotiated a series of transfers and exchanges with CBPPL (Section 1.1.3) in order to secure a stable supply of timber for these mills. With this arrangement, these sawmills utilize the sawlog material from these areas and sell the pulpwood and pulp chips (sawmills residue) to CBPPL. As well, these operators trade pulpwood from their Crown cutting permits with CBPPL for sawlogs which also increases their supply.

Specific commercial strategies are as follows:

- utilize irregular cut block sizes that follow contours and natural boundaries where possible
- consider maintenance of unharvested corridors between harvest blocks to act as wildlife utilization corridors
- vary buffer widths to protect other values (ie. larger buffers on salmon rivers)
- where possible, utilize winter harvest on wet and sensitive sites
- maintain current size and distribution of clear cuts
- consider landscape design techniques to mitigate viewshed impacts on areas of concern
- keep losses through timber utilization to a minimum (< 6 m<sup>3</sup>/ha)

### 7.1.2 Domestic

The harvest of domestic fuel wood and saw logs occurs from three main sources in the zone;

- Designated domestic cutting blocks on Crown land,
- Cutover clean up on Crown and Industry limits, and
- Landing and roadside clean up on both Crown and Industry limits.

For the designated cutting blocks, the harvest scheduling and priorities apply, however it may not always be practical to follow. Domestic cutting blocks are generally established near communities where concentrations of existing timber are eligible for harvest. Typically, scattered throughout these blocks there exist timber that normally would not be scheduled for commercial harvest in the planning period. Ideally, each individual domestic cutter would be issued their own harvest block to ensure harvest of optimal stands. However, this is generally not practical and domestic cutters are allowed to harvest anywhere within the designated area provided immature timber is not harvested. For this reason, the optimal harvest schedule may not always be followed in domestic areas. Utilization of cutover residue, dead timber and scrub areas, which are not part of the timber supply analysis, would compensate this difference. Specific domestic harvest strategies include:

- target low volume stands that have poor commercial harvest chances
- encourage use of under utilized species (birch, larch and aspen)
- target dead and insect damaged stands that are beyond commercial salvage.
- where possible, target alienation class 3 lands that have low commercial potential
- in areas of high domestic demand, limit volume allocation in designated cutting areas and encourage alternate sources (birch, cutovers, landings, scrub etc)
- monitor stands harvested in domestic cutting areas for compliance to the harvest schedule and change areas available for harvest to reflect this schedule
- all domestic cutting within FMD 14 is controlled and monitored by DNR

### 7.2 Silviculture

Section 1.4.1.4 describes the regeneration patterns of the major tree species by each disturbance type and generally by ecoregion. On average, there is a 20 percent regeneration failure rate

(NSR) across all disturbance types. Generally, areas that do not regenerate naturally are renewed by some combination of site preparation and planting or gap planting. Areas that are regenerated are left to develop naturally. In the case of balsam fir which is a prolific regenerator and usually forms an overstocked stand, some form of thinning is usually applied to improve the growth and development characteristics of the regenerating stand. In District 14 and parts of District 15 there is concern about the type (species) of regeneration because of the presence of balsam woolly adelgid in the lowlands. In these areas, regeneration to balsam fir may not necessarily be acceptable on certain site types. Prescriptions to deal with these problems will be presented in sections to follow.

### 7.2.1 Forest Renewal

Since maintenance of the forestry landbase is crucial, forest renewal treatments are the most important silviculture technique in the zone. Forest renewal silvicultural treatments are designed to ensure that a new forest is established after disturbance by harvesting, insect, wind or fire. In most regions of the province these prescriptions normally involve some form of treatment to prepare the site to accept planted seedlings. In some parts of the zone planting is usually done without mechanical site preparation however prescribed burning is the preferred site preparation method due to adelgid presence. Planting, whether full planting or gap planting is done to ensure stocking of desired species is at acceptable levels.

Treatment to prepare sites that have been overgrown with hardwoods and other herbaceous species with herbicides has been done to reduce this competition and make the site more accessible and suitable for planting. Release herbicide treatment is also done which reduces the competition for a few years to allow planted seedlings to get established and “get the jump” on the non crop tree species that occupy the site. Herbicides, while used sparingly, are sometimes a necessary tool to help establishment of a new forest, particularly on the better sites. CBPPL is currently developing a Forest Vegetation Pest Management Plan (PMP) in conjunction with our FSC certification that will guide and regulate our use of pesticides. This PMP describes the vegetation management process used by CBPPL. The PMP is to be used by CBPPL staff and contractors when assessing and conducting vegetation management treatments, while considering the obligations of the Forest Stewardship Council’s (FSC) National Boreal Standard and other applicable forest management plan commitments. Forest insect pest management is the responsibility of the provincial government.

Complete regeneration failure requiring full planting is rare in the zone because of the excellent regeneration capabilities of balsam fir. When it does happen however, the site is prepared, if necessary, and planted with mainly black or white spruce and to a lesser extent Norway spruce. In some cases where adelgid has been a problem, balsam fir regeneration is ignored and the site is planted anyway. In instances where regeneration failure is incomplete but the site does not have enough desired regeneration, the area can be gap planted. This treatment is designed to increase the stocking on sites that have not regenerated to sufficient levels or on sites that have sufficient balsam fir regeneration but have a high adelgid risk. On these sites planting is done

through the existing regeneration to obtain a sufficient stocking level of an adelgid resistance species. Gap planting is done with the same species as above, and, coupled with the natural regeneration already present on site, result in a mixed softwood forest.

Where possible, seedlings are grown with seed from local seed sources. A seed orchard has been established at Pynns Brook to produce seed from plus trees collected throughout the province. Plus trees are normally selected because they have superior growth and physiological characteristics. It is hoped that once the orchard is in full production, the majority of the planting stock will be grown from this source. The ultimate goal is to establish plantations with seedlings that have superior growth characteristics and thus increase yield and maintain genetic diversity.

Exotic species have been planted in trials at some locations in the zone, however, it is not anticipated that they will form any substantive proportion of the planting program in the future.

### 7.2.2 Forest Improvement

Forest improvement prescriptions are designed to treat existing, established forest stands in an attempt to enhance development. These treatments usually involve thinning overstocked balsam fir stands at either a young age 10 -15 years (precommercial thinning) or an intermediate age 25 - 35 years (commercial and diameter limit thinning).

Precommercial thinning reduces density levels in overstocked stands in order to maximize volume increment and operability (piece size) in the shortest period of time. Trees removed are not of merchantable size and are left behind to return the nutrients to the site. In the zone, balsam fir is usually thinned to favour any spruce that may be in the stand. In this way a mixed softwood stand is produced (depending on the original density of spruce) which is more diverse and less susceptible to insect infestation. As well, any hardwood species that are not in direct competition with spruce or fir are left to increase the biodiversity of the stand. Surveys conducted on precommercially thinned areas many years after treatment have shown that a very large portion of the plots in the treated areas contain hardwoods. In recent years the precommercial thinning program has dropped significantly. This trend is expected to continue.

Commercial and diameter limit thinning is done in older balsam fir stands and is designed to capture any mortality that would normally occur in the stand through self thinning. The trees from commercial thinning operations are extracted and utilized. The remaining trees are left to grow, free from competition and are harvested when mature. By salvaging this eminent mortality a higher yield can be obtained in these stands. This treatment has been done sparingly in the zone. As with precommercial thinning, spruce and hardwoods are left where possible to increase the stand diversity. Both types of thinning will produce large diameter stems in a shorter time period which should increase the percentage of merchantable volume that is suitable for sawlog material and decrease the harvest cost.

Specific strategies:

- ensure regeneration of areas disturbed by harvest, insect, wind and fire to prevent loss of productive land base
- use thinning techniques in young stands to increase stand development, reduce rotation age, and increase the percentage of sawlogs in stands
- where possible, promote species mixes particularly with spruce, white pine and hardwoods to reduce susceptibility to insect attack and increase biological diversity
- where possible, use seedlings grow from local seed sources to protect genetic diversity
- ensure levels of planting and thinning used in the wood supply analysis are achieved
- work towards pre harvest planning to identify areas with potential adelgid problems so that alternate silvicultural prescriptions can be promptly employed

### 7.3 Access Roads

Timely access to harvesting areas is the key to successful implementation of harvesting plans. Roads also provide access for other recreational values such as hunting, fishing, skiing, berry picking and hiking. Roads can also have a negative impact both from an environmental perspective (loss of productive land base) and other value perspective (access near remote outfitting lodges).

As a general principle from both an environmental and a cost perspective, the minimal amount of road will be built to effectively harvest available timber. As well, roads are constructed to specifications that minimum right-of-way and running surface width but still access the timber in a safe and effective manner. Forwarding distances are maximized to the economic limit to minimize the amount of road constructed. These principles ensure that the minimum amount of road is built and that loss of productive land base and environmental disturbance is minimized.

In sensitive and wet areas, winter harvesting and road construction are encouraged and are often the only option. This minimizes environmental disturbance and provides access to areas that would otherwise be left unharvested.

In many instances forest access roads “open up” new areas which are then subject to cabin development (often illegal). They also provide access to remote areas where outfitting businesses operate. This generally leads to competition for hunting areas between local and “sport” hunters and may detract from the “remote” designation of the lodge. In such instances cabin development should be controlled to limit local access. Road decommissioning may also be considered, depending on cost and mitigation of conflicting uses for that road.

The nature of the current wood supply, particularly on class 3 areas, is that harvestable areas or stands are becoming smaller and more remote and scattered. Achievement of the allocated

harvest is contingent on accessing these areas and stands; therefore more roads are needed to access this timber.

Specific strategies:

- where possible, build winter roads to access sensitive and wet areas
- minimize amount of road built by maximizing forwarding distances
- use minimum road standard to safely and effectively match the logging chance
- work with appropriate agencies (crown lands) to control cabin development
- consider road decommissioning on roads near remote outfitting lodges and other areas of concern where requested and where feasibly possible

## 7.4 Forest Protection

### 7.4.1 Insects and Disease

As indicated in section 1.5.5, insects have been a major natural disturbance factor in the zone. The main tree species, balsam fir, is susceptible to most of the major insects including spruce budworm, hemlock looper, balsam fir sawfly, and balsam woolly adelgid. In the past, severe mortality has occurred resulting in massive salvage efforts. In recent years, quality standards at local pulp mills have changed to require a timely supply of fresh, green timber. As a result, the window to salvage insect damaged timber is now one to two years after mortality. On a positive note, access to most areas has increased and improved allowing for quicker reaction to salvage insect mortality.

Populations of hemlock looper and balsam fir sawfly were building in the late 1990's and resulted in mortality and growth loss and a subsequent treatment program in the early 2000's. Since that time the populations of these insects have been in decline in District 14. However in District 15 balsam fir sawfly populations in the northern parts have increased resulting in a treatment program in 2008. While the adelgid problem was mostly detrimental in stands on the lowland areas of District 14 the insect is starting to impact stands in the entirety of Zone 6.

As outlined in the harvesting and timber supply analysis sections, the timber supply is based on following a predetermined harvest schedule and minimizing inventory deductions (of which insect damage is a portion). In the event of a major insect infestation, salvage efforts may change harvest priorities and thus the optimal harvest schedule may not be followed. If insect damaged stands cannot be harvested in a timely manner, an additional harvest in the form of unsalvaged mortality may occur resulting in inventory deductions that are higher than anticipated. In both eventualities, deviations from harvest schedules and inventory adjustment levels will have to be closely monitored to ensure that the validity of the AAC calculations is not compromised. Yield curves are also adjusted in areas that have been chronically attacked by balsam woolly adelgid and balsam fir sawfly to account for growth loss.

Specific strategies:

- use silvicultural techniques at the stand level to alter species mix and increase stand vigor to make stands less susceptible to insect attack
- where possible, use harvest scheduling techniques to alter species mix across the landscape to avoid “setting the table” for severe insect infestation
- in conjunction with provincial and federal initiatives, use pertinent and approved biological and chemical insecticides such as BTK virus)

#### 7.4.2 Fire

As outlined in previous sections, most of the zone has little fire history due to the relatively abundant rainfall and above average snowfall; however, some fires have occurred. A fire in an unusually dry year can have devastating effects on the forest however and can exacerbate an already fairly tight wood supply situation. The zone can minimize the risk of a serious fire by maintaining a highly trained, efficient and effective fire control program and by minimizing the risk in forest stands through maintenance of health and vigour.

Specific strategies:

- use silvicultural treatments and protection from insects to increase health and vigour of stands
- maintain fire control capabilities by both the crown and industry.
- where possible, promote species mixes in stands to minimize risk

#### 7.4.3 Windthrow

Wind throw usually occurs in stands that are old and decrepit or in stands that have been predisposed by some other disturbance such as insects and disease. To minimize the effects of blow down, stands will be managed to promote health and vigour mainly through silvicultural treatments and protection from insects.

Specific strategies:

- avoid commercial thinning in areas with high wind damage potential (hilltops on high elevations etc.)
- maintain forest in healthy vigorous condition through silvicultural treatments and protection from insects
- design cut blocks to follow contours and natural boundaries to minimize risk of windthrow to residual forest

## 7.5 Information and Education

Information and education is one of the key elements to providing for more active and effective participation in the planning process at all levels. Through interaction with various user groups and the general public a better understanding of each others values and positions is gained. The more we know about each others values and where these values are located on the landscape the better the ability to mitigate any potential impacts of harvesting on these values. For example, learning where a cabin is located can help planners when selecting areas for harvest and provide a contact to discuss impacts and mitigations.

Many comments were made during the planning team meetings about the good exchange of information and ideas that occurred. It is through such forums that information can be shared which will provide a basis for more effective and informed participation in such processes. Other such vehicles for information and education which will be actively pursued are:

Specific strategies:

- field trips
- school visits
- open houses
- commercial operator environmental training programs
- information meetings
- training courses
- seminars
- general day to day contact

## Section 8 Proposed Activities

### 8.1 District 14

#### 8.1.1 Overview

This section will outline all forest activities that will occur on CBPPL land in District 14 from 20014-2018. More specifically, all proposed harvesting, silviculture and access road construction activities as well as environmental protection measures, activities inside protected water supply areas, surveys, and information and education initiatives will be presented and discussed in detail.

To present a more comprehensive overview of proposed activities on the entire district an overview map is presented in Appendix 3. This map shows all proposed operating areas by

CBPPL in District 14. Maps of individual operating areas and summary sheets are also presented in Appendix 3. The summary sheets give a brief description of each area, the type of activities that will occur and any issues raised and mitigation measures employed.

#### 8.1.2 Allocation of Timber Supply

There is 488 500 m<sup>3</sup> of timber scheduled to be harvested by CBPPL in District 14 for the next 5 years.

Summer and winter harvesting operations will be carried out in the District, with summer operations concentrated in areas farthest from the main public highways, and winter operations closer to the public highways to reduce snow-clearing costs.

For the most part, harvesting will be carried out in accordance with the clear-cut silviculture system. All merchantable spruce and fir trees on site (with the exception of some trees left as wildlife trees and some patches of timber) will be cut and extracted, leaving only sub merchantable stems and noncommercial species such as eastern larch and white birch. This approach is appropriate for shallow-rooted Boreal conifers such as fir and spruce, which are prone to wind throw following partial cutting. Additionally, clear cutting enhances the early growth of balsam fir seedlings, which typically exist in large numbers beneath mature balsam fir forests but require full sunlight to achieve optimal growth.

Harvesting and forest access road construction will focus on the harvest of mature and over mature timber throughout the district. CBPPL has conducted trial harvests in semi mature PCT in adelgid damaged stands as part of a stand conversion silviculture treatment. The 2014-2018 harvest plan for district 14 will include a component of mature PCT timber. Harvesting activities will endeavor to maximize the use of mechanical harvesters, extending winter and summer operating seasons in order to allow for the delivery of fresh wood over the entire twelve months of the year. This will allow us to reduce overall pulpwood inventories, and supply the

mill with a constant supply of fresh pulpwood with the optimum species mix, over the maximum number of operating days per year.

Our mechanized logging fleet will be used in combination with our conventional logging systems to ensure maximum utilization during winter harvesting, harvesting blow down timber, and harvesting low volume stands. Short wood harvesters and forwarders, which are equipped with wide tires and tracks, have a very low ground bearing pressure, and when they spread a brush mat of tops and branches in their travel path, ground disturbance is significantly reduced. Cable logging systems may be considered in areas of steep terrain to maximize timber volume recovery while minimizing site disturbance. Full tree harvest systems will not be employed.

Table 9 details this proposed volume and compares it to the 5 year AAC. There will be no deviation from the five-year AAC.

Table 9 Proposed softwood harvest on CBPPL Limits in District 14, 2014-2018

<b>Total Class I and III AAC on CBPPL Limits</b>	<b>575 000</b>
<b>CBPPL Harvest on CBPPL Limits</b>	<b>488 500</b>
<b>Total Harvest CBPPL Limits FMD 14</b>	<b>488 500</b>
<b>CBPPL AAC Deviation (+/-)</b>	<b>-86 500</b>

### 8.1.2.1 Commercial

The timber scheduled for commercial harvest in the district is mature to over mature with some stands of PCT. The stands cued for harvest are highlighted on the operating area maps in red. This represents two times the actual proposed harvest. The purpose of including more volume than is actually proposed is to allow for operational flexibility within operating areas without having to constantly amend the plan.

Table 10 Summary of commercial harvest by operating area in District 14 for 2014-2018

<b>CBPPL Limits in FMD 14 Operating Area Name</b>	<b>Operating Area Number</b>	<b>Proposed Harvest Volume (m<sup>3</sup>)</b>
Black Duck	K-14-61	180 000
Camp 185	K-14-62	100 000
Fishell's River	K-14-63	10 000
Camp 180	K-14-64	100 000
MacPherson's Pond	K-14-65	60 000
Codroy Pond	K-14-66	38 500
<b>Total CBPPL Harvest:</b>		<b>488 500m<sup>3</sup></b>

\* Note: Alternate Area (volumes are not included in the total)

### 8.1.2.2 Domestic

Domestic harvesting in FMD 14 is administered by the Crown and will occur in designated domestic cutting areas and is generally conducted on a small patch cut system. All domestic cutting is done under permit which has conditions attached which outline species, volume, location and utilization standards to be employed. Most harvesting occurs in the winter with extraction by snowmobile.

### 8.1.2.3 Hardwoods

The management of hardwoods on CBPPL timber limits for commercial and domestic use has been transferred to the Crown For more information on the Crown hardwood harvest and management please refer to the Crown 2014-2018 plan.

### 8.1.3 Silviculture

There are two silviculture prescriptions scheduled for the next five years; planting/gap planting including site preparation where required, and pre commercial thinning. Planting is designed to return a site to a minimum stocking level with the desired species, mainly spruce. There is full planting when there is complete natural regeneration failure and gap planting when a site has some desired regeneration but not enough to meet minimum stocking standards. Precommercial thinning is done to reduce the density on overstocked regeneration so that growth can be concentrated on the remaining crop trees and thus reduce the time to harvest. Vegetation control using herbicides may be employed, and mechanical plantation cleaning may be undertaken.

Table 11 summarizes silviculture treatments for the next five-year by treatment. There are 1000 ha of planting and 750 ha of pre-commercial thinning planned which meet the assumptions for silviculture in the timber supply analysis.

Table 11 Summary of silviculture treatments on CBPPL Limits in District 14 for 2014-2018

Treatment	Area (ha)
Pre Commercial Thinning	750
Planting	1000
Herbicide	200
<b>Total</b>	<b>1950</b>

Areas that are scheduled for commercial harvest or have been harvested in the past five years are candidates for planting or gap planting to black or white spruce. These areas will undergo reconnaissance and or intensive regeneration surveys to determine the need for planting. Immature and regenerating stands have also been identified on operating area maps and are candidates for precommercial thinning if reconnaissance surveys deem them suitable.

#### 8.1.4 Primary Access Roads and Bridges

CBPPL is estimating 31 km of primary forest access roads to be built in District 14 in the next five years (Table 15). These roads will be built to access timber for harvesting in the operating areas proposed.

Table 12 Primary Access Road Construction on CBPPL Limits in District 14  
For 2013 –2018

<b>Operating Area Name</b>	<b>Operating Area Number</b>	<b>Length (km)</b>	<b>Bridges</b>
Black Duck	K-14-61	27.0	4
MacPherson’s Pond	K-14-65	4.0	1
<b>Total</b>		<b>31.0</b>	<b>5</b>

All roads will be built to the specifications of the Class 3 standard and all pertinent EPG’s will be followed. As well, referrals will be sent to all relevant agencies (including DFO and Water Resources Division) before any construction is initiated. Significant harvesting will be occurring in previously harvested areas (second growth). Where necessary, existing roads and abandoned roads will be upgraded to a primary or secondary road standard.

#### 8.1.5 Activities in Protected Water Supply Areas

For all harvesting operations scheduled to occur in protected water supply areas, wider buffers will be used inside these PWSA’s and the pertinent EPG’s for operations within PWSA’s will be strictly adhered to. There will be continuous monitoring inside these areas and buffers will be flagged to ensure compliance with the guidelines. In addition, a Certificate of Approval under Section 10 of the Environment Act must be obtained before any commercial or domestic harvesting commences inside the PWSA.

#### 8.1.6 Environmental Protection

#### 8.1.6.1 Fire

Wildfire has not been prevalent in the district in the past number of years and as a result there have been little merchantable volume lost. There have been major fires in the past however, so the we must remain vigilant in its fire suppression program to ensure any future losses are minimized.

There are crown fire crews and equipment stationed at St. Georges, Corner Brook and Pasadena in the fire season whose direct responsibility is fire protection. In addition, support, equipment and manpower at both the regional and provincial level is available should the need arise. There are air tankers stationed at Deer Lake and Gander and helicopters at Pasadena that are available for initial attack.

#### 8.1.6.2 Insect and Disease

Monitoring and protection programs for insects and disease is done are coordinated by the forest protection division in Corner Brook.

#### 8.1.6.3 General Environment

The environmental protection guidelines form the basis for protecting the environment from the effects of forest activities. Commercial forest activities can have a significant environmental impact if not conducted properly. The guidelines are designed to provide site specific measures to ensure that these impacts are avoided. Highlights of measures to avoid these impacts include no activity buffer zones, modification of harvesting design and equipment, avoidance of sensitive site during critical periods, consultation with other regulatory agencies and of course, monitoring. Specific measures that govern each forestry activity are detailed in Appendix 1.

In addition to the government regulations, CBPPL is bound to guidelines in our own environmental management system (EMS). This includes our own Standard Operating Procedures, a 3 level operational inspection system and all the principals and guidelines within our 3 EM systems. See more details in section 6. This level of commitment is backed up by annual internal and independent 3<sup>rd</sup> party external audits.

#### 8.1.7 Surveys

Utilization surveys will be conducted on all cutovers to insure loss of merchantable timber is minimized. CBPPL will work with the Industry Services Division in Corner Brook to implement a yield comparison study to compare the expected volume in an operating area to those actually

attained. The results of this survey will help refine the inventory deduction described in Section 3.

As previously mentioned, reconnaissance and intensive regeneration surveys will be conducted on cutovers created during the next five years as well as those created in the past five years to determine the need for planting. As well, reconnaissance surveys will be done on regenerating stands to determine the suitability for precommercial thinning.

#### 8.1.8 Information and Education

CBPPL will continue its attempt to educate the general public to ensure meaningful and effective consultation and input can be attained. This will be accomplished through planning team fieldtrips and meetings, school presentations, open houses, annual participation with the Teacher Institute, meetings and National Forest Week activities.

### **8.2 District 15**

#### 8.2.1 Overview

This section will outline all forest activities to occur on crown land in District 15 from 2013-2018. More specifically, all proposed harvesting; silviculture and access road construction activities as well as environmental protection measures, activities inside protected water supply areas, surveys, and information and education initiatives will be presented and discussed in detail.

To present a more comprehensive overview of proposed activities on the entire district an overview map is presented in Figure 15 (Appendix 4). This map shows all proposed operating areas by CBPPL in District 15. Maps of individual CBPPL operating areas and summary sheets are also presented in Appendix 4. The summary sheets give a brief description of each area, the type of activities that will occur and any issues raised and mitigative measures employed.

#### 8.2.2 Allocation of Timber Supply

There is 1 245 000 m<sup>3</sup> of timber scheduled to be harvested by CBPPL in District 15 for the next 5 years on CBPPL Licensed land. Harvesting activities will be carried out in several locations throughout the District as shown on the operating area maps contained in Appendix 4.

Summer and winter harvesting operations will be carried out in the District, with summer operations concentrated in areas farthest from the main public highways, and winter operations closer to the public highways to reduce snow-clearing costs.

For the most part, harvesting will be carried out in accordance with the clear-cut silviculture system. All merchantable spruce and fir trees on site (with the exception of some trees left as wildlife trees and some patches of timber) will be cut and extracted, leaving only sub merchantable stems and noncommercial species such as eastern larch and white birch. This approach is appropriate for shallow-rooted Boreal conifers such as fir and spruce, which are prone to wind throw following partial cutting. Additionally, clear cutting enhances the early growth of balsam fir seedlings, which typically exist in large numbers beneath mature balsam fir forests but require full sunlight to achieve optimal growth.

Harvesting and forest access road construction will focus on the harvest of mature, over mature timber and PCT stands throughout the district. Harvesting activities will endeavor to maximize the use of mechanical harvesters, extending winter and summer operating seasons in order to allow for the delivery of fresh wood over the entire twelve months of the year. This will allow us to reduce overall pulpwood inventories, and supply the mill with a constant supply of fresh pulpwood with the optimum species mix, over the maximum number of operating days per year.

Our mechanized logging fleet will be used in combination with our conventional logging systems to ensure maximum utilization during winter harvesting, harvesting blow down timber, and harvesting low volume stands. Short wood harvesters and forwarders, which are equipped with wide tires and tracks, have a very low ground bearing pressure, and when they spread a brush mat of tops and branches in their travel path, ground disturbance is significantly reduced. Cable logging systems may be considered in areas of steep terrain to maximize timber volume recovery while minimizing site disturbance. Full tree harvest systems will not be employed.

Table 13 details the proposed volume and compares it the 5 year AAC. There will be no deviation from the five-year AAC.

Table 13 Proposed Harvest on CBPPL Limits in District 15, 2014-2018

<b>Total Class I and III AAC CBPPL Limits</b>	<b>1 482 000 m3</b>
<b>CBPPL Harvest on CBPPL Limits</b>	<b>1 245 000 m3</b>
<b>Crown Harvest on CBPPL Limits</b>	<b>0</b>
<b>Total Harvest CBPPL Limits FMD 15</b>	<b>1 245 000 m3</b>
<b>CBPPL AAC Deviation (+/-)</b>	<b>-237 000 m3</b>

Note: The Crown harvest is shown in the Crown 5 Year Plan.

#### 8.2.2.1 Commercial

The timber scheduled for commercial harvest in the district is mature to over mature with a substantial amount of PCT. The stands cued for harvest are highlighted on the operating area maps in red. This represents two times the actual proposed harvest. The purpose of including more volume than is actually proposed is to allow for operational flexibility within operating areas without having to constantly amend the plan.

Table 14 Summary of commercial harvest by operating area in District 15 for 2014-2018

<b>CBPPL Limits in FMD 15 Operating Area Name</b>	<b>Operating Area Number</b>	<b>Proposed Harvest Volume (m<sup>3</sup>)</b>
North Brook	K-15-60	330 000
Crescent Pond	K-15-61	30 000
Howards	K-15-62	60 000
Cooks Pond	K-15-63	150 000
Stagg Hill	K-15-64	270 000
Steady Brook Lake	K-15-65	30 000
Glide Lake	K-15-66	50 000
Hughes Lake	K-15-67	0
Goose Arm	K-15-68	250 000
12 Mile Dam	K-15-69	25 000
Serpentine Lake	K-15-70	50 000
<b>Total CBPPL Harvest:</b>		<b>1 245 000 m3</b>

\* Note: Alternate Area (volumes are not included in the total)

#### 8.2.2.2 Domestic

Domestic wood cutting for firewood is allowed on Company limits with a valid permit. Permits are supplied by CBPPL to the public at a costs of \$20 per year and allow the public to cut residual birch in cutover areas, birch in hardwood stands (unless otherwise posted), larch, and slash left from past logging operations for domestic use only (not for sale). Permits can be obtained from the Woodlands office. CBPPL does request that the public adhere to the Regulations and Policies outlined on the Domestic Wood Cutting permit.

#### 8.2.2.3 Hardwoods

The hardwood AAC for District 15 is 35 180m<sup>3</sup>. The majority of this volume is residual hardwood contained in softwood-dominated stands. Although hardwood is not specifically targeted in this plan, the residual hardwood volume encountered during the softwood harvest will be utilized either as biofuel for the pulp mills energy requirements or it will be left on the cutovers for domestic or commercial harvest.

### 8.2.3 Silviculture

There are two silviculture prescriptions scheduled for the next five years; planting/gap planting including site preparation where required, and pre commercial thinning. Planting is designed to return a site to a minimum stocking level with the desired species, mainly spruce. There is full planting when there is complete natural regeneration failure and gap planting when a site has some desired regeneration but not enough to meet minimum stocking standards. Precommercial thinning is done to reduce the density on overstocked regeneration so that growth can be concentrated on the remaining crop trees and thus reduce the time to harvest. Vegetation control using herbicides may be employed, and mechanical plantation cleaning may be undertaken.

Table 14 summarizes silviculture treatments for the next five-year by treatment. There are 2000 ha of planting and 3000 ha of pre-commercial thinning planned which meet the assumptions for silviculture in the timber supply analysis.

Table 15 Summary of silviculture treatments on CBPPL Limits in District 15 for 2014-2018

Treatment	Area (ha)
Pre Commercial Thinning	3000
Planting	2000
Herbicide	400
<b>Total</b>	<b>5400</b>

Areas that are scheduled for commercial harvest or have been harvested in the past five years are candidates for planting or gap planting to black or white spruce. These areas will undergo reconnaissance and or intensive regeneration surveys to determine the need for planting.

Immature and regenerating stands have also been identified on operating area maps and are candidates for precommercial thinning if reconnaissance surveys deem them suitable.

#### 8.2.4 Primary Access Roads and Bridges

There are 98 km of primary forest access roads scheduled to be built in District 15 in the next five years. These roads will be built to access timber for harvesting in the operating areas proposed. All roads will be built to the specifications of the Class 3 standard and all pertinent EPG's will be followed. As well, referrals will be sent to all relevant agencies (including DFO and Water Resources Division) before and construction is initiated. Significant harvesting will be occurring in previously harvested areas (second growth). Where necessary, existing roads and abandoned roads will be upgraded to a primary road or secondary road standard.

Table 16 Summary of Primary Access Road Construction on CBPPL Limits  
in District 15 2014 -2018

<b>Operating Area Name</b>	<b>Operating area Number</b>	<b>Length (km)</b>	<b>Bridges</b>
North Brook	K-15-60	43.0	5
Crescent Pond	K-15-61	2.0	0
Howards	K-15-62	9.0	0
Cooks Pond	K-15-63	9.0	1
Stagg Hill	K-15-64	25.0	3
Steady Brook Lake	K-15-65	0	0
Glide Lake	K-15-66	0	0
Hughes Lake	K-15-67	0	0
Goose Arm	K-15-68	10.0	1
12 Mile Dam	K-15-69	0	0
Serpentine North	K-15-70	0	0
<b>Total</b>		<b>98.0</b>	<b>10</b>

#### 8.2.5 Activities in Protected Water Supply Areas

For harvesting operations inside PWSA's, wider buffers will be used and the pertinent EPG's will be attached to any permits issued for these areas. There will be continuous monitoring

inside these areas and buffers will be flagged to ensure compliance with the guidelines. In addition, a Certificate of Approval under Section 10 of the Environment Act must be obtained before any domestic harvesting commences inside the PWSA.

## 8.2.6 Environmental Protection

### 8.2.6.1 Fire

Wildfire has not been prevalent in the district in the past number of years and as a result there have been few timber losses. Despite this fact the we must remain vigilant in its fire suppression program to ensure any future losses are minimized.

There are Crown fire crews and equipment stationed at Corner Brook and Pasadena in the fire season whose direct responsibility is fire protection. In addition, support, equipment and manpower at both the regional and provincial level is available should the need arise. There is an air tanker stationed at Deer Lake and a helicopter at Pasadena that are available for initial attack.

### 8.2.6.2 Insect and Disease

Monitoring and protection programs for insects and disease is done are coordinated by the forest protection division in Corner Brook.

### 8.2.6.3 General Environment

The environmental protection guidelines form the basis for protecting the environment from the effects of forest activities. Commercial forest activities can have a significant environmental impact if not conducted properly. The guidelines are designed to provide site specific measures to ensure that these impacts are avoided. Highlights of measures to avoid these impacts include no activity buffer zones, modification of harvesting design and equipment, avoidance of sensitive site during critical periods, consultation with other regulatory agencies and of course, monitoring. Specific measures that govern each forestry activity are detailed in Appendix 1.

In addition to the government regulations, CBPPL is bound to guidelines in our own environmental management system (EMS). This includes our own Standard Operating Procedures, a 3 level operational inspection system and all the principals and guidelines within our 3 EMSs. See more details in section 6. This level of commitment is backed up by annual internal and independent 3<sup>rd</sup> party external audits.

## 8.2.7 Surveys

Utilization surveys will be conducted on all cutovers to insure loss of merchantable timber is minimized. CBPPL will work with the Industry Services Division in Corner Brook to implement a yield comparison study to compare the expected volume in an operating area to those actually attained. The results of this survey will help refine the inventory deduction described in Section 3.

As previously mentioned, reconnaissance and intensive regeneration surveys will be conducted on cutovers created during the next five years as well as those created in the past five years to determine the need for planting. As well, reconnaissance surveys will be done on regenerating stands to determine the suitability for precommercial thinning.

### 8.2.8 Information and Education

CBPPL will continue its attempt to educate the general public to ensure meaningful and effective consultation and input can be attained. This will be accomplished through planning team fieldtrips and meetings, school presentations, open houses, annual participation with the Teacher Institute, meetings and National Forest Week activities.

## Section 9 Mitigations

### 9.1 District 14

Site specific mitigations arising from concerns identified during the planning process and from other regulatory agencies are identified on the summary sheets accompanying each operating area in Appendix 3. Highlights of the mitigative measures that arose as a result of planning team meetings and consultation with three main regulatory agencies (Wildlife Division, Parks and Natural Areas Division and Dept. of Tourism) are listed below. More specific details by individual operating area can be found on the map cover sheets.

- 1) A number of harvest deferral areas were established to serve as connectivity corridors across FMD 14 and 15. The location and width of these harvest deferral areas were determined in consultation with the Wildlife Division and Parks and Natural Areas personnel. The purpose of these corridors are to provide for movement and dispersal of wildlife species but primarily the threatened Pine Marten and to provide general landscape connectivity.  
CBPPL agreed to remove these corridors from this five year plan and consult with these agencies again when CBPPL would want to put them back into a future plan. It is hoped

that better knowledge of Pine Marten distribution, numbers and status will be used to make future decisions on such harvest deferrals.

With the establishment of these corridors, it was agreed by all parties that the rest of our five year plan would be approved by these two agencies as no other specific concerns arose as a result of our meetings.

- 2) During the planning process, CBPPL met one on one with all outfitter operators within or near our five year plan in District 14 according to a list provided by the Dept. of Tourism. CBPPL gained great insight into the business and individual issues of these operators. Most operators had no concerns with our five year plan as presented. A few individual operators did express some specific concerns but in all cases, mitigations were put into effect to address those issues to their satisfaction.

Guiding principles, which outline procedures to follow should an unforeseen conflict arise, have been identified for each value in Section 4. Highlights of the general mitigative measures that CBPPL consider are:

- Existing guidelines for caribou and pine marten will be followed for all affected areas.
- Appropriate buffers will be maintained to protect potential archaeological artifacts.
- Appropriate buffers will be maintained to protect Permanent Sample Plots established by the Department of Natural Resources.
- Appropriate buffers will be maintained to protect the T'Rainy Provincial Park.
- Appropriate buffers will be maintained adjacent to the Trans Canada Highway.
- Appropriate buffers will be maintained adjacent to the Viking Trail Highway.
- CBPPL commits to a 100m no-cut buffer on the main stem of scheduled salmon rivers.
- The threatened Newfoundland marten is known to reside in some of the proposed operating areas. CBPPL commits to working with the Wildlife Division of the Department of Environment and Conservation, the Canadian Forest Service, the Department of Natural Resources and other partners to ensure the habitat requirements of an expanding marten population are met, while simultaneously addressing the timber requirements of CBPPL.

- Designated Cottage Development areas occur in areas across CBPPL timber limits. CBPPL recognizes that there will be certain concerns related to harvesting around these areas and commits to working with Crown Lands Administration Division and local cottage owners.
- A Certificate of Approval will be obtained from the Minister of Environment and Conservation (Water Resources Division) before any forest management activities are implemented within a Protected Public Water Supply Area.

## 9.2 District 15

Site specific mitigations arising from concerns identified during the planning process and from other regulatory agencies are identified on the summary sheets accompanying each operating area in Appendix 4. Highlights of the mitigative measures that arose as a result of planning team meetings and consultation with three main regulatory agencies (Wildlife Division, Parks and Natural Areas Division and Dept. of Tourism) are listed below. More specific details by individual operating area can be found on the map cover sheets.

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CBPPL agreed to remove these corridors from this five year plan and consult with these agencies again when CBPPL would want to put them back into a future plan. It is hoped that better knowledge of Pine Marten distribution, numbers and status will be used to make future decisions on such harvest deferrals.  
With the establishment of these corridors, it was agreed by all parties that the rest of our five year plan would be approved by these two agencies as no other specific concerns arose as a result of our meetings.
- 2) During the planning process, CBPPL met one on one with all outfitter operators within or near our five year plan in District 15 according to a list provided by the Dept. of Tourism. CBPPL gained great insight into the business and individual issues of these operators. Most operators had no concerns with our five year plan as presented. A few individual operators did express some specific concerns but in all cases, mitigations were put into effect to address those issues to their satisfaction.

- 3) During our meetings with the Dept. of Tourism, it was agreed to extend the harvest deferral area surrounding Pinchgut Lake and along the TCH east and west of the lake that was established in our last five year plan for FMDs 14 and 15. It is my understanding that this harvest deferral area was agreed to by the Dept. of Tourism and the Pinchgut Lake cabin owners association, primarily to address viewscape concerns.

Guiding principles, which outline procedures to follow should an unforeseen conflict arise have been identified for each value in Section 4. Highlights of the general mitigative measures that CBPPL consider are:

- Existing guidelines for caribou and pine marten will be followed for all affected areas.
- Appropriate buffers will be maintained to protect potential archaeological artifacts.
- Appropriate buffers will be maintained to protect Permanent Sample Plots established by the Department of Natural Resources.
- Appropriate buffers will be maintained to protect the T'Rainy Provincial Park.
- Appropriate buffers will be maintained adjacent to the Trans Canada Highway.
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- CBPPL commits to a 100m no-cut buffer on the main stem of scheduled salmon rivers.
- The threatened Newfoundland marten is known to reside in some of the proposed operating areas. CBPPL commits to working with the Wildlife Division of the Department of Environment and Conservation, the Canadian Forest Service, the Department of Natural Resources and other partners to ensure the habitat requirements of an expanding marten population are met, while simultaneously addressing the timber requirements of CBPPL.
- Designated Cottage Development areas occur in areas across CBPPL timber limits. CBPPL recognizes that there will be certain concerns related to harvesting around these areas and commits to working with Crown Lands Administration Division and local cottage owners.
- A Certificate of Approval will be obtained from the Minister of Environment and Conservation (Water Resources Division) before any forest management activities are implemented within a Protected Public Water Supply Area.

## **Section 10 Plan Administration**

### **10.1 Monitoring**

Monitoring of planned activities is critical to ensure objectives and operations are carried out in a manner consistent with various guidelines and provincial and federal legislation. Monitoring occurs at the operational level and the planning level.

#### **10.1.1 Operational Level**

Annually, Corner Brook Pulp and Paper Limited is issued a **Certificate of Managed Land**. Attached to this Certificate are schedules that set out the conditions that must be followed in order to maintain managed land status. Schedule five contains the Environmental Protection Guidelines (EPG). Industry planning and operations must comply with schedule five or the land can be declared unmanaged and fines levied. NFS staff will monitor for compliance with schedule five and recommend managed or unmanaged status.

All planned activities are monitored by the NFS to ensure all guidelines and regulations pertaining to environmental protection, harvesting, road construction, and silviculture are followed. Any infractions or deviations from the regulations or guidelines are dealt with as required under the Forestry Act.

In addition to the monthly Government monitoring for compliance Corner Brook Pulp and Paper Limited has put in place an Environmental Management System (EMS), which was registered to the internationally recognized environmental standards ISO 14001, CSA Z809 and the FSC Boreal Standard. For more information, see section 6 of the plan.

As part of this EMS, many monitoring activities take place throughout the year (checking for non-compliances) including:

- Field inspections (Number 1, 2 and 3) completed by contractors and Operations Superintendents,
- Yearly internal EMS audit,
- Yearly external EMS and field surveillance audits,
- External compliance audit every five (5) years,
- External communication from the public through our web site, cbppl.com.

All non-compliances are documented and reported to the EMS Management Review Committee. All non-compliances are reviewed by the EMS Committee, and corrective action is implemented where and when required.

#### 10.1.2 Planning Level

The planning team has established a monitoring committee (which is the planning team) whose primary role is to monitor implementation of this Five Year Operating Plan as well as those of the Crown for the zone. This is a crucial role, as many implementation commitments are stated in the plan. The primary function of the monitoring committee is to:

- Monitor plan implementation for consistency with commitments in the plan.
- Identify concerns with plan implementation to team members.
- Review annual operating plans before implementation.
- Provide recommendations for plan changes.
- Establish protocol for concerns reported to and/or identified by monitoring committee.

The monitoring committee should meet at least once a year to review the annual operating plan. Additional meetings may be required to review amendments or provide recommendations should changes be required as a result of a catastrophic event such as fire which may precipitate changes

to the plan. Field trips to view on the ground activities has proven effective by monitoring teams in the past and will be encouraged during the implementation of this plan.

## 10.2 Amendments

Due to the dynamic nature of forest activities, amendments are often required because of changes in the forest, operational realities, imposition of additional requirements or guidelines, or some other unforeseen circumstance. These changes to the five-year operating plan must be submitted as amendments and approved before they are implemented. There are two types of possible amendments for this plan, one that can be approved internally by the Newfoundland Forest Service and one that must be submitted to the Environmental Assessment Division for public review. Changes to this plan can be approved by the Newfoundland Forest Service if they are:

- Within one kilometer of an operating area described in the five-year operating plan, an additional area for timber harvesting that is, in total, not more than 50 hectares in each year of the plan.
- Within a forest management district, an additional area for silviculture treatment of not more than 20 percent of the total operating area described in the five year operating plan over the five year term of the plan.
- Within an operating area described in the five year operating plan, not more than one kilometer, in total, of new primary forest access road in addition to existing and proposed primary forest access road in each year of the plan.
- Adjacent to an operating area described in the five-year operating plan, not more than half a kilometer, in total, of new primary forest access road in each year of that plan.

Changes that are not covered by the above must be submitted for Environmental Assessment (EA) in the form of an amendment to the five-year operating plan. Once approved through EA the amendment still has to be approved by the Ecosystem Management Division of the Forest Service however.

Amendments requiring submission through EA will be reviewed by the monitoring committee. The monitoring committee will review other amendments if the District Manager deems that they represent a significant change to the plan.

## **Appendix 1.**

### **ENVIRONMENTAL PROTECTION GUIDELINES FOR ECOLOGICALLY BASED FOREST RESOURCE MANAGEMENT (STAND LEVEL OPERATIONS)**

#### **ENVIRONMENTAL PROTECTION GUIDELINES**

■ Forests are interconnected webs which focus on sustaining the whole, not the production of any one part or commodity. Trees, the most obvious part of a forest are critical structural members of a forest framework. However, trees are only a small portion of the structure needed for a fully functioning forest. • (Hammond, 1991).

This ecologically based approach to forest resource management requires that resource managers shift their focus from managing components of the ecosystem to managing the three-dimensional landscape ecosystems that produce them. Primary concern becomes the maintenance of landscapes and waterways as complete ecosystems because the only way to assure the sustained benefit of forest values, now and in the future, is to keep them and all their parts in a healthy state. This is the foundation for an ecologically based approach to forest management. It means that everyone attends to the conservation and sustainability of ecosystems instead of sharply focussing on the productivity of individual or competing resources which has been our traditional mode of operation.

The Newfoundland Forest Service is committed to the concept of forest ecosystem management which is captured in the twenty-year Forestry Development Plan (1996-2016) vision statement:

■ To conserve and manage the ecosystems of the Province which sustain forests and wildlife populations and to provide for the utilization of these resources by the people of the Province under the principles of sustainable development, an ecologically-based management philosophy, and sound environmental practices•.

There are five strategic goals in the twenty-year Forestry Development Plan (1996-2016) which provide the foundation upon which ecologically based resource management will be developed.

1. Manage forest ecosystems so that their integrity, productive capacity, resiliency, and biodiversity are maintained.
2. Refine and develop management practices in an environmentally sound manner to reflect all resource values.
3. Develop public partnerships or networks to facilitate meaningful public involvement in resource management.
4. Promote adaptive ecosystem management and conduct research that focuses on ecosystem processes, functions, and ecosystem management principles.
5. Establish and enforce conservation and public safety laws with respect to managing ecosystems.

The environmental protection guidelines provide specific ■on the ground• tasks for loggers and gives management direction to planners. Individually, the guidelines appear as specific rules; however, when implemented collectively they will facilitate ecologically-based forest resource management.

## 1.0 GENERAL GUIDELINES

These guidelines are generated from impacts described in the literature and from discussions with resource managers. As new information and management techniques become available the guidelines will be changed to reflect this improved information base. Consequently, the guidelines will be reviewed on an annual basis to incorporate any necessary changes. The ■General Guidelines• apply to all forestry activities (i.e., silviculture, harvesting, road construction). These guidelines form Schedule IV of the Certificate of Managed Land. They are conditions of Crown commercial permits and they form the basis for the voluntary compliance program.

### 1.1 Planning

1. The location and type of all waterbody crossings must be submitted to the Department of Environment and Labour and the Department of Fisheries and Oceans. Certificates of Approval are required from both departments for waterbody crossings. A waterbody is defined as any water identified on the latest 1:50,000 topographic map. Appropriate protection is still required for streams greater than 1.0 m in width (at its narrowest point from the high water mark) not found on the 1:50,000 topographic map.
2. All waste disposal sites require a Certificate of Approval from the Minister of Government Services.
3. Excessive bulldozing is not permitted and no more than 10% of the total forest within an operating area can be disturbed. In situations where specific operating areas require more than 10% disturbance to capture available timber, the operator is required to rehabilitate the area to reduce the total net disturbance to the 10% maximum. Where disturbance has been excessive, a rehabilitation plan will be developed with the Forest Service District Manager. Disturbance is defined as per the Ground Disturbance Survey Guidelines developed by the Newfoundland Forest Service.
4. When an archaeological site or artefact is found, the *Historical Resources Act* requires that all development temporarily cease in the area and the discovery be reported to the Historical Resources Division (709-729-2462).

The Historic Resources Division will respond immediately and will have mitigation measures in place within seven days as agreed to by the Historical Resources Division and the operator. Forestry activity can then continue.

The Historic Resources Division will be contacted during the preparation of five-year operating plans to determine the location of historic resources and appropriate mitigation measures will be designed. These measures will include such things as buffer zones and modified operations or surveys.

5. Should an oil or gas spill in excess of 70 litres occur, the operator must make every effort to first, contain, and second, clean up the spill after reporting the spill to the appropriate authorities:

**Government Services Centre  
Spill Report Line  
(709) 772-2083 or 1-800-563-2444**

6. The Parks and Natural Areas Division will be contacted during the preparation of five-year operating plans. Where operations are within one kilometre of provisional and ecological reserves, wilderness reserves or provincial parks, modified operations may be necessary.
7. In areas where caribou utilize arboreal lichens during the summer and/or winter, and terrestrial lichens during the summer, a minimum amount of lichen forest must be maintained for the caribou. Forestry activity will be designed in consultation with the Wildlife Division where this situation has been identified.
8. Areas identified as containing rare and/or unique flora (through literature review) are to be protected from forestry activity by avoiding these areas.
9. Where mature stands of timber for moose shelter and moose yards are required, they will be identified in consultation with Wildlife Division.
10. The impacts of forest operations on pine marten have been an ongoing issue. Until appropriate guidelines are developed for pine marten habitat, forestry activities within high density pine marten areas and dispersion areas required for pine marten recovery will require consultation with the Wildlife Division.
11. During the preparation of five-year operating plans, areas identified as ■Sensitive Wildlife Areas• in the Land Use Atlas require consultation with the Wildlife Division prior to any forestry activity.

## **1.2 Operations**

1. A 20-metre, treed buffer zone shall be established around all water bodies that are identified on the latest 1:50,000 topographic maps and around water bodies greater than 1.0 metre in width that do not appear on the maps. Where the slope is greater than 30% there shall be a no-harvest buffer of 20 m + (1.5 x % slope). All equipment or machinery is prohibited from entering waterbodies; thus, structures must be created to cross over such waterbodies. Every reasonable effort will be made to identify intermittent streams and they will be subject to this buffer requirement. The District Manager of Forest Ecosystems is permitted to adjust the specified buffer requirements in the following circumstances:

- the no-cut, treed buffer can exceed the 20 meters for fish and wildlife habitat requirements.
  - a 50-metre, no-cut, treed buffer will be maintained around known black bear denning sites (winter) or those encountered during harvesting. These den sites must be reported to the Wildlife Division.
  - no forestry activity is to occur within 800 metres of a bald eagle or osprey nest during the nesting season (March 15 to July 31) and 200 metres during the remainder of the year. The location of any raptor nest site must be reported to the Wildlife Division.
  - all hardwoods within 30 metres of a waterbody occupied by beaver are to be left standing.
  - a minimum 30-metre, no-cut, treed buffer will be maintained from the high water mark in waterfowl breeding, moulting and staging areas. These sites will be identified by the Canadian Wildlife Service and/or the Wildlife Division.
2. Heavy equipment and machinery are not permitted in any waterbody, on a wetland or a bog (unless frozen) without a Certificate of Approval from the Department of Environment and Labour and without contacting the DFO area habitat coordinator.
  3. No heavy equipment or machinery is to be refuelled, serviced, or washed within 30 metres of a waterbody. Gasoline or lubricant depots must be placed 100 metres from the nearest waterbody. All fuel-storage tanks (including JEEP tanks) must be registered with the Department of Government Services and Lands and installed in accordance with the *Storage and Handling of Gasoline and Associated Products Regulations*. Fuel storage within Protected Water Supplies are more stringent. Please refer to ■Guidelines for Forest Operations within Protected Water Supplies• for more information.
  4. Used or waste oil shall be collected either in a tank or a closed container.
  5. Above ground storage tanks shall be surrounded by a dyke. The dyked area will contain not less than 110% of the capacity of the tank. The base and walls of the dyke shall have a impermeable lining of clay, concrete, solid masonry or other material, designed, constructed and maintained to be liquid tight to a permeability of 25L/m<sup>2</sup>/d. There shall be a method to eliminate water accumulations inside the dyke.
  6. Wherever possible, place slash on forwarded trails while forwarders are operating in an area. Skidding timber through any waterbody (as defined in Section 1.2.1) is prohibited.
  7. Any forestry operation that directly or indirectly results in silt entering a waterbody must be dealt with immediately (A government official must be notified within 24 hours). Failure to comply will result in the operation being stopped.

8. Woody material of any kind (trees, slash, sawdust, slabs, etc.) is not permitted to enter a waterbody. Woody material on ice within the high water floodplain of any waterbody is prohibited.
9. To minimize erosion and sedimentation, waterbody crossings shall:
  - i) have stable approaches;
  - ii) be at right angles to the waterbody;
  - iii) be located where channels are well defined, unobstructed, and straight;
  - iv) be at a narrow point along the waterbody;
  - v) allow room for direct gentle approaches;
  - vi) have all mineral soil exposed during bridge construction and culvert installation seeded with grass.
10. Garbage is to be disposed of at an approved garbage disposal site. Prior to disposal it must be contained in a manner not to attract wildlife. All equipment is to be removed from the operating area where operations are completed.
11. Where safety is not an issue, a minimum average of 10 trees or snags per hectare (average on a cut block) or a clump of trees is to be left on all sites (harvesting and silviculture). Preference will be given to trees over 50 cm dbh.

## **2.0 TIMBER HARVESTING GUIDELINES**

### **2.1 Planning**

1. There will be corridors to connect areas of forest that will not be harvested (isolated stands within cutovers are not considered forested areas). These corridors connect wildlife habitat, watersheds and minimize fragmentation. Acceptable corridor vegetation includes productive forest areas (all age classes) and softwood/hardwood scrub. These corridors do not have to be continuous (i.e., breaks in vegetation are permitted) and will be determined in the five-year operating plan and identified in the annual work schedule.
2. Complete utilization of harvested trees is required. (Complete utilization is harvesting trees to a top diameter of 8 cm and stumps to a height of 30 cm). The District Manager can modify the stump height requirement to accommodate snow conditions. Where markets exist, non-commercial tree species that are harvested should be brought to roadside. This will be determined in consultation with the District Manager.
3. Preplanning is required on all forest operations (Industry/Crown) at the request of the District Manager (for Industry) and the Section Head i/c Management Planning (for Crown). Preplanning will include:

- boundaries of protected water supplies (if applicable);
  - existing and proposed access roads;
  - skid trails and landing locations;
  - areas sensitive to erosion;
  - buffer zones around water bodies;
  - approved stream crossings;
  - fuel storage locations;
  - wildlife corridors.
4. Harvesting is not permitted within caribou calving areas from May 15 - June 15 (calving period). Harvesting is not permitted within post-calving areas from June 15 to July 31. These areas will be identified by the Wildlife Division.
  5. Harvest scheduling should be modified during the migration of wildlife (e.g., caribou) and during temporary wildlife concentrations (e.g., waterfowl staging). Wildlife biologists will identify the areas of concern, and in conjunction with district or company foresters, aid in the modification of forestry operations.

## **2.2 Operations**

1. When skid trails and winter roads are to be constructed, soil disturbance and impacts on waterbodies are to be minimized. The operator will use culverts and/or log bridges depending on the conditions. The objective is to minimize erosion and sedimentation, to avoid restricting streamflow, and to ensure fish passage in fish-bearing streams. Erosion control measures (e.g., laying down brush mats and the construction of diversion ditches for water run-off) are to be maintained while the skid trail is in use. All temporary crossings are to be removed at the end of the operating season unless the District Manager agrees to extend the life of the crossing for more than one season.
2. A minimum 50-metre, no-cut buffer is to be left between operations within approved cabin development areas.

## **3.0 FOREST ACCESS ROADS GUIDELINES**

### **3.1 Planning**

Forest access roads, borrow pits and quarries shall avoid:

- i) wetlands, deltas, and floodplain or fluvial wetlands;
  - ii) terrain with high erodibility potential;
  - iii) known sensitive wildlife areas such as;
    - calving grounds, post calving areas, caribou migration routes,

- caribou rutting areas, and winter areas,
- waterfowl breeding areas and colonial nesting sites,
- established moose yards by one kilometre,
- eagle and osprey nest sites,
- where site conditions and engineering permits, main haul roads should be one kilometre from permanent water bodies and all other roads by not more than 100 metres,
- endangered or endemic species or sub-species of flora or fauna and other areas to be determined by qualified authorities;

- iv) known sensitive fish areas such as:
  - spawning and rearing grounds;
- v) historically significant areas such as:
  - archaeological sites;
- vi) existing reserves such as:
  - parks (municipal, provincial, national);
  - wilderness areas and ecological reserves;
  - rare and endangered plant sites and habitats.

2. With respect to borrow pits and quarries, the operator shall:

- i) minimize the number of new borrow areas opened for construction and/or maintenance;
- ii) use existing borrow areas whenever practical;
- iii) be in possession of a valid quarry permit from the Department of Mines and Energy prior to aggregate extraction activities;
- iv) not locate pits and quarries in sensitive areas as identified by planning processes.

3. Forest access roads will not obstruct wildlife migration routes. The following guidelines will be followed to ensure the road is as unobstructing as possible:

- i) roads should be of low profile (less than 1 m above the surrounding terrain);
- ii) slash and other debris shall be removed;
- iii) the slope of ditches and road banks should not exceed 1. horizontal to vertical.

4. Culverts and bridges are to be installed in accordance with the manufacturer's specifications and the specifications attached to the Certificates of Approval received from the Department of Environment and Labour and from the Department of Fisheries and Oceans. Culvert ends will be properly riprapped.

5. Where road construction is to occur around identified waterfowl breeding, moulting and staging areas, the Canadian Wildlife Service is to be consulted.

6. Road construction is not permitted within any buffer zone except with the permission of the District Manager.
7. When a skid trail is on steep ground and is no longer in use, cut-off ditches and push lanes must be created. The frequency will be determined by the District Manager.
8. When disturbance is over 10%, the conditions in 1.1.3 will apply.
9. There shall be no bulldozing of standing merchantable timber or poor utilization of merchantable softwoods and hardwoods during cutting of the right-of-way.
10. Excavations required for the construction of piers, abutments or multi-plate culverts shall be completed in the dry. (Where exceptions occur, consultation with District manager is required).
11. On a site specific basis, roads can be decommissioned and/or rehabilitated as directed by the District Manager. Decommissioning is defined as barring access; rehabilitation means to re-vegetate the road.

### **3.2 Operations**

1. A "no-grub" zone of 30 metres of undisturbed ground vegetation must be maintained around any water body crossing to minimize the damage to the lower vegetation and organic cover, thus reducing erosion potential. Manual clearing at waterbody crossing sites should be used to remove or control vegetation. Right-of-way widths at waterbody crossings should be kept to a minimum.
2. Fill materials for road building must not be obtained from any waterbody or from within the floodplain of any waterbody.
3. Trees are to be felled away from all waterbodies, and slash and debris should be piled above the high water mark so that it cannot enter waterbodies during periods of peak flow.
4. Equipment activity in water crossing areas is to be kept to a minimum. Whenever possible, any work is to be carried out from dry stable areas.
5. Unnecessary side casting or backfilling in the vicinity of waterbodies is not permitted. Where topographical constraints dictate that the roadbed must be constructed adjacent to a waterbody, road slope stabilization is to be undertaken at the toe of the fill where it enters the water (an area where active erosion is likely). The placement of large riprap or armour stone is recommended in such areas.
6. Side casting must be carried out in such a manner that sediment does not enter any waterbody.
7. Where borrow pit or quarry activity is likely to cause sediment-laden run-off to contaminate a waterbody, sediment control measures such as filter fabric berms or sedimentation ponds are to

be installed. Contact is to be made with the District Manager prior to construction where such conditions exist.

8. Stabilize cut banks and fill slopes in the vicinity of waterbodies.
9. When using ditches, especially on long slopes, baffles and culverts are to be used at frequent intervals.
10. When constructing ditches near streams, the ditch itself is not to lead directly into the stream.
11. Keep ditches at the same gradient as the road.
12. In side hill and similar areas, install ditches on the uphill sides of roads to intercept seepage and run-off.
13. Borrow pits are to be located 50 metres from the nearest waterbody.

#### **4.0 SILVICULTURAL PRACTICES AND FOREST REGENERATION GUIDELINES**

##### **4.1 Scarification**

1. Select scarification methods best suited for preparing the area for planting and for minimizing ground disturbance.
2. Where slash is piled into windrows, ensure the windrows are placed where slash cannot be washed into streams at peak flooding conditions.
3. To minimize erosion, do not direct scarification equipment straight down slope.
4. Where safety is not an issue, a minimum average of 10 cavity trees or snags per hectare, or a clump of trees, will be left on all sites.
5. Whenever possible, white pine regeneration will not be disturbed.

##### **4.2 Planting**

1. Landings will be stabilized through seeding (grass) or planting at time of plantation establishment.

##### **4.3 Pre-commercial Thinning**

1. Where possible, do not carry out pre-commercial thinning in important wildlife areas during the periods of birth and/or hatching. These areas and times will be identified by the Wildlife Division.
2. Where white pine regeneration is present, the District Manager will determine how the pine will be thinned.
3. Trees cut will not be felled into waterbodies.

## **5.0 FOREST PROTECTION GUIDELINES**

1. A pesticide application licence must be obtained from the Department of Environment. This licence will determine planning and operational requirements.

## **6.0 GUIDELINES FOR FORESTRY OPERATIONS WITHIN PROTECTED WATER SUPPLY AREAS**

The primary function of a protected water supply area is to provide the public with an adequate quantity of safe and good quality water on a permanent basis, to meet its present and future demands. Any other activity within water supply areas is considered secondary, and if permitted, must be strictly regulated and monitored to ensure that the water supply integrity is not threatened and the quality of the water is not impaired.

In Newfoundland, forestry operations are permitted in protected water supply areas on a limited and controlled basis provided the proposed operations have no, or minimal, water quality impairment potential.

The following permits and approvals are required prior to the beginning of forestry operations within a protected water supply area:

- 1) Approval of the forest operating plan by the Newfoundland Forest Service.
- 2) Approval of the forest operating plan by the provincial Department of Environment and Labour and issuance of a Certificate of Approval under *Section 10* of the *Department of Environment Act*.
- 3) Quarry permits from the provincial Department of Mines and Energy for all borrow areas and ballast pits on unalienated Crown lands and alienated Crown land (i.e., leased and licenced land).
- 4) Stream crossing permits under *Section 11* of the *Department of Environment Act* and from the federal Department of Fisheries and Oceans.

- 5) Other permits or approvals as required by natural resource management and regulatory agencies.

### **6.1 Planning**

1. Prior to beginning any work, a forest operating plan must be prepared and approved by the Newfoundland Forest Service and the Department of Environment and Labour, and a Certificate of Approval must be obtained under *Section 10* of the *Department of Environment Act* for site specific activities such as road construction, commercial harvesting, silvicultural operations, and other activities associated with forestry operations.
2. In addition to the information normally contained in a forest operating plan, the plan must include maps to show:

- < the boundary of the protected water supply area;
- < existing and proposed access roads;
- < proposed harvesting areas;
- < areas sensitive to erosion;
- < buffer zones around water bodies;
- < approved stream crossings;
- < proposed landing and skid trail locations;
- < proposed fuel storage locations;
- < peatland and other wetlands;
- < nearby communities;
- < other relevant information.

The plan must also contain a written section describing the harvesting techniques to be used, the equipment required for the operation, and the schedule of the operation.

3. Locate roads to avoid all waterbodies and areas of sensitive terrain.
4. The forest operating plan must identify an Operations Manager who shall have the responsibility for ensuring that the special protection measures are followed. The Operations Manager is responsible for co-ordinating clean-up efforts in the event of a fuel or oil spill.

### **6.2 Forest Access Road Construction**

1. A "no-grub" zone of 30 metres of undisturbed ground vegetation must be maintained around any waterbody crossing to minimize the damage to the lower vegetation and organic cover, thus reducing the erosion potential. Manual clearing at waterbody crossing sites should be used to

remove or control vegetation. Right-of-way widths at waterbody crossings should be kept to a minimum.

2. Clear-cutting up to the perimeter of any waterbody is not permitted. In all areas where road construction approaches a waterbody, a buffer zone of undisturbed vegetation must be maintained on both sides of the right-of-way using the buffer zone criteria outlined in section 6.6.
3. Fill materials for road building must not be obtained from any waterbody or from within the floodplain of any waterbody.
4. Provide adequately designed and constructed drainage ditches along forest roads to allow for good road drainage.
5. Take-off ditching can be used on both sides of the road, or in conjunction with culverts, to divert the ditch flow into the woods or into stable vegetated areas above the no-grub zones. Where take-off ditches are unstable or cannot be constructed, the use of check dams and settling basins in the ditches is required until the ditches become stabilized.
6. Trees are to be felled away from all waterbodies, and slash and debris should be piled above the high water
7. Equipment activity in water crossing areas shall be kept to a minimum. Any work will be carried out in dry, stable areas.
8. When working near sensitive areas such as streams or lakes, road building operations causing erosion or siltation are to be followed as per section 1.2.7.
9. Unnecessary side casting or backfilling in the vicinity of water bodies is not permitted. Where topographical constraints dictate that the roadbed must be constructed adjacent to a water body, road slope stabilization is to be undertaken at the toe of the fill where it enters water, an area where active erosion is likely. The placement of large riprap or armour stone is recommended in such areas. Contact is to be made with the District Manager prior to construction when such conditions occur.
10. Side casting must be carried out in such a manner that sediment does not enter any waterbody.
11. Maintenance support sites must be located outside the protected water supply area.

### 6.3 Forest Access Road Stream Crossings

1. Stream fording is prohibited in protected water supply areas.

2. All stream crossings, whether culverts or bridges, require written approval under *Section 11* of the *Department of Environment Act*.
3. The operator must comply with all terms and conditions of a Certificate of Approval for stream crossings.

#### **6.4 Harvesting**

1. Harvesting or other heavy equipment will not be used on wetlands or bogs.
  2. Steep areas with high potential for erosion should not be harvested.
3. Wherever possible, skid trails should run along contours and never cross wetlands and waterbodies.
4. Landings will be few in number with a maximum size of less than 0.25 ha. All landings should be located at least 100 metres from a waterbody.
5. In sensitive areas prone to erosion, equipment must have wide tires, or harvesting must occur during the winter when the ground is frozen.
6. Harvesting equipment shall not enter a buffer zone or any waterbody without permission of the District Manager.
7. The operator must implement erosion control and rehabilitation measures in areas where soils have been unduly disturbed by harvesting activity. In addition to general erosion control measures presented in other sections of these guidelines, the following should also be considered in protected water supply areas:
  - < undertake contour furrowing;
  - < construct diversion ditches to lessen the possibility of forming new drainage channels;
  - < seed or plant areas that are difficult to stabilize by other means;
  - < plough or rip prior to seeding any surfaces which have been compacted.

#### **6.5 Buffer Zones**

The Newfoundland Forest Service on unalienated Crown land and the appropriate company on leased, licenced, private or charter land will provide the operator with a map

indicating the harvesting area and no-cut treed buffer zones, and will ensure that the operator is familiar with the boundaries.

No forestry activities are permitted within the following buffer zones.

Water Body	Width of Buffer Zone
Intake pond/lake/reservoir	A minimum of 150 m
River intake	A minimum of 150 m for 1 km upstream and 100 m downstream
Main river channel	A minimum of 75 m
Major tributaries/lakes/ponds	A minimum of 50 m
Other water bodies	A minimum of 30 m

### 6.6 Fuel/Oil Handling and Storage

Fuel storage and the operation of fuel storage equipment is regulated by the *Storage and Handling of Gasoline and Associated Products Regulations (1982)* under the Department of Environment and Lands Act. According to the regulations, the owner or operator of a fuel storage system must submit a Schedule "A" Storage Tank System Application to the Department of Environment. The applicant must be in receipt of a Certificate of Approval for the system before the system is used for fuel storage. Section 9 of the above Act states: "*No owner or operator shall directly or indirectly cause pollution of the soil or water by causing, suffering or permitting leakage or spillage of gasoline or associated products from a storage tank system or vehicle.*"

In addition to the above regulatory requirements, the following guidelines are to be followed:

1. Bulk fuel is to be stored outside the protected water supply area. If fuel must be stored in the protected area, it must be in the least sensitive area and be approved by the Water Resources Management Division of the Department of Environment and Labour.
2. Fuel must be stored in self-dyked, above-ground Jeep Tanks which have been approved by the Department of Environment and Labour.
3. A maximum of seven days fuel supply can be stored within a water supply area.

4. Refuelling must not take place within 100 metres of a waterbody.
5. Daily dipping of tanks and weekly reconciliations are mandatory. Visual inspection of the dykes and the surrounding area must be carried out daily and inspection records must be maintained.
6. Each unit must be fitted with a locking valve system for the elimination of water inside the outer tank. The valve must be closed and locked except to drain precipitation.
7. Each person involved with fuel handling must be cautioned that any spillage is to be cleaned up immediately.
8. Each person involved with fuel storage must exercise extreme caution when refuelling equipment.
9. All waste materials and waste oil on the site must be collected in enclosed containers and removed to an approved site at least weekly.
10. Contaminated soil or snow must be disposed of at an approved waste disposal site.
11. Any spill in excess of 70 litres must be reported immediately through the 24- hour Spill Report Number (709-772-2083) or the Government Services Centre (1-800-563-2444).
12. All self-dyked Jeep Tanks must be located at a minimum distance of 500 metres from any major waterbody.
13. A fuel or oil spill clean-up kit must be kept on site within the protected area to facilitate any clean-up in the event of a spill. This kit must include absorbent pads, loose absorbent materials such as dried peat, speedy-dry or sawdust, and a container such as an empty drum for recovering the fuel or oil. If there is a bulk fuel storage facility within the protected area, the clean-up kit must include the following list of fuel or oil spill clean-up equipment:

- < Fire pump and 100 metres of hose
- < Two hand operated fuel pumps
- < Six recovery containers such as empty drums
- < Four long handled shovels
- < Two pick axes
- < Ten metres of containment boom
- < Twenty-five absorbent pads
- < One hundred litres of loose absorbent material.

When any fuel spill occurs, stop the fuel flow immediately. This may entail repairing a leak, pumping out a tank, or shutting off a valve. If fuel or oil is spilled onto soil, dyking may

be necessary. If fuel or oil enters water, absorbent booms or barriers such as fencing or netting with loose absorbent or straw must be used to contain the spill. If necessary, culverts may be blocked off by earth or wooden barriers to contain the fuel or oil provided the threat of flooding is addressed.

All recovered fuel or oil must be stored in containers. Contaminated soil must be removed and placed in containers for transport and disposal. Extensive soil removal may cause problems such as erosion and the subsequent siltation of waterbodies; therefore, the affected area must be backfilled and sloped and revegetated as required by the Department of Environment and Labour.

Recovered fuel or oil should be reused or collected by a waste oil company for recycling. Oily debris and contaminated soils must be disposed of at an approved waste disposal site with the approval of the disposal site owner or operator. Contact must be made with the appropriate regional office of the Department of Environment and Labour before disposal.

### **6.7 Support Service and Structures**

1. Storage of any type of pesticide, chemical or other hazardous material is prohibited within a protected water supply area.
2. Dormitory camps, garages or any other structures are prohibited within a protected water supply area.
3. The establishment of new sawmills is not permitted in protected water supply areas.
  4. Wherever possible, toilet facilities must be provided in all work areas.
5. Garbage cans must be located in all work areas and garbage is to be collected regularly and disposed of at an approved waste disposal site outside the protected area.

### **6.8 Silviculture**

1. Chemicals are to be used within a protected water supply area only under the approval of the Division of Water Resources.
  2. Scarification must be minimized and restricted to the trench or spot types.
3. If scarification leads to erosion or sedimentation of small streams or water bodies, scarification operations must be suspended and remedial measures must be taken.

## 6.9 Abandonment

When forestry operations in a protected water supply area have been completed, an abandonment plan for the area should be developed. This will involve input from the Newfoundland Forest Service, the Community involved, and the Water Resources Management Division of the Department of Environment and Labour. In general, the purpose of the plan is: (i) to ensure that the post-harvest conditions do not lead to water quality impairment, and (ii) to discourage activities or use of the area that could lead to water quality impairment.

An important question will be whether access roads will remain open. This will be decided on a case-by-case basis in consultation with the municipality, Water Resources Management Division and the operator. Issues such as the rehabilitation of cutover areas, landing sites, skid trails, and the abandonment of roads are to be discussed during the consultation process to control post-harvesting environmental impacts and activities.

The following are recommended precautionary measures if roads are to be closed to control post-harvesting access to the area:

- < Use water bars (trenches 8-10" deep dug across the road) to intercept and deflect surface roadside ditches rather than have it flow into a waterbody. Water bars can be placed 500 metres apart in gentle to moderate terrain (up to 10% slope), but should be no more than 150 metres apart in terrain greater than 10%. In most cases, it is sufficient to limit water bars to one kilometer on each side of a stream crossing.
- < Road-side ditches should flow into the woods or into stable, vegetation covered areas.
  - < Stable bridge abutments and erosion protection works at crossings need not be removed.
- < Bridge decking, culverts and other easily removable structures should be transported out of the watershed area.
- < All disturbed areas of river banks will be stabilized and seeded.

## 6.10 Monitoring and Inspection

1. Forestry operations approved under Section 10 of the Department of Environment Act will be inspected from time to time by the staff of the Water Resources Management Division to ensure the operator's compliance with the environmental protection guidelines and the terms and conditions of the approvals.
2. In case of an oil spill, the sedimentation of a water body, or any other water quality impairment related issue, the operator might be required by the Department of Environment and Labour to undertake water quality monitoring to assess the extent of the damage and to select appropriate mitigative measures to correct the harmful conditions.

3. Any water quality impairment problem should be reported to the Water Resources Management Division.

## **7.0 PROCESSING FACILITIES AND SUPPORT SERVICES GUIDELINES**

1. If possible, use previously disturbed sites (e.g., borrow pit).
2. Minimize the size of the area cleared for the establishment of any camp, processing or support structures. Wherever possible, these facilities should not be established within 100 metres of a waterbody.
3. All sumps containing effluent from a kitchen or washroom facility must be properly treated on a daily basis in compliance with Department of Health regulations.
4. Sewage disposal must be carried out in compliance with the Public Health Act.
5. A permit to occupy is required for Crown Land developments.
6. Facilities will not be located within known sensitive wildlife areas. These areas will be identified by the Wildlife Division.

7. A permit is required for a firearm.

## **8.0 PLANNING AND MUNICIPAL AREA GUIDELINES**

1. Timber harvesting, resource road construction, silviculture, processing facilities, and support services are developments under the Urban and Rural Planning Act. Where these activities occur within a planning area boundary or within 400 metres of a protected road, a development permit is required before any activity takes place.
2. Consultation with the planning agency (usually municipality, but also the Development Control Unit of the Department of Municipal and Provincial Affairs) is to be made at the planning stage so that regulatory requirements can be made known and taken into account. This should occur three months before the desired commencement of the development and the permit obtained about one month before the development is to start.

## **Appendix 2**

List of invitees and planning team members for Districts 14 and 15 – Zone 6

List of Invitees and their Affiliation for Planning Zone 6

Name	Affiliation
Western Star - Public Notice	
Tony Bouzane	Federal Fisheries and Oceans
Tim Moulton	Corner Brook Pulp & Paper Limited
Peter Bull	Tourism Branch, Outdoor Products
Damien Morrissey	Crown Lands
Fred Kirby	Mineral Lands Division
Stephanie Ganz	Provincial Agriculture
Martha Drake	Provincial Archaeology
Milt Crewe	Department of Environment
Kirsten Miller, Emily Herdman	Inland Fish and Wildlife Division
Jeri Graham	Parks and Natural Areas Division
Christa Ramsay	Water Resources
Newfoundland & Labrador Lumber Association	
Hospitality Newfoundland & Labrador Protected Areas Association	
John McCarthy	Salmon Preservation Association for the Waters of
Don Ivany	Atlantic Salmon Federation
Kevin Sweetland	Newfoundland and Labrador Snowmobile
Keith Payne	Newfoundland & Labrador Outfitters Association
Brian Hearn	Forestry Canada
Peter Deering	Parks Canada
Sean Dolter	Western Newfoundland Model Forest
Natural History Society	
Jerry Pulcan, Joshua Mailhiot	Canadian Wildlife Service
Town of Deer Lake	
Paul Barnable	City of Corner Brook
Town of Pasadena	
Town of Massey Drive	
Town of Steady Brook	
Town of Lark Harbour	
Town of York Harbour	
Town of Benoit's Cove	
Town of Mount Moriah	
Town of Hughes Brook	
Town of Irishtown/Summerside	
Town of Rocky Harbour	

Town of Wiltondale	
Town of Cox's Cove	
Town of Trout River	
Town of Norris Point	
Town of Woody Point	
Town of Glenburnie/Birchy Head/Shoal	
Town of Meadows	
Town of St. Jude's	
Town of Burgeo	
Town of Burnt Island	
Town of Cape St. George	
Town of Isle Aux Morts	
Town of Kippens	
Town of Lourdes	
Town of Port Aux Basques	
Town of Port Au Port East	
Town of Port Au Port West	
Town of Stephenville	
Town of Stephenville Crossing	
Alan Skinner	Skyhawk Enterprises (Moose Creek lodge)
Angus Kettle	Yace enterprises Ltd. (Crabbes River Outfitters)
Art Ryan	Mountain Top Cabin Ltd. (Mountain Top Outfitters)
Benedict Alexander	Steel Mountain Lodge
Charlie Gillam	Grandy's River Outfitting
Dan Ryan	Ryan's Outfitters
Darold Perrier	C & D Perrier Enterprise Ltd. ( Back Woods Hunting)
Dave Gillam	Moosehill Cabins Ltd.
Dean MacDonald	Moose Valley Outfitters
Dwayne O'Quinn	Burgeo Road Outfitters Inc.
Fred Levy	Sandy Pond Outfitters
George Hardy	Bayview Outfitters
Gerry Pumphrey	JDI Outdoor Adventures Ltd.
John Hilliard	Hilliard's Hunting Camp
Ken Ryan	Northside Outfitters & Adventures Ltd.
Kevin Decker	Woodland Lodges Ltd.
Leonard Ryan	Island View Cabins Ltd.
Mark Baldwin	Ironbound Outfitters
Mark Pike	Ironbound Outfitters
Murray Cruickshank	Adventure Quest Outfitters (Moose Mtn. Lodge)
Ray Humber	Newfound Outfitters (Little Barachois Camp)
Rick Legge	Back Country Outfitters Inc. (Stag Hill Lodge)

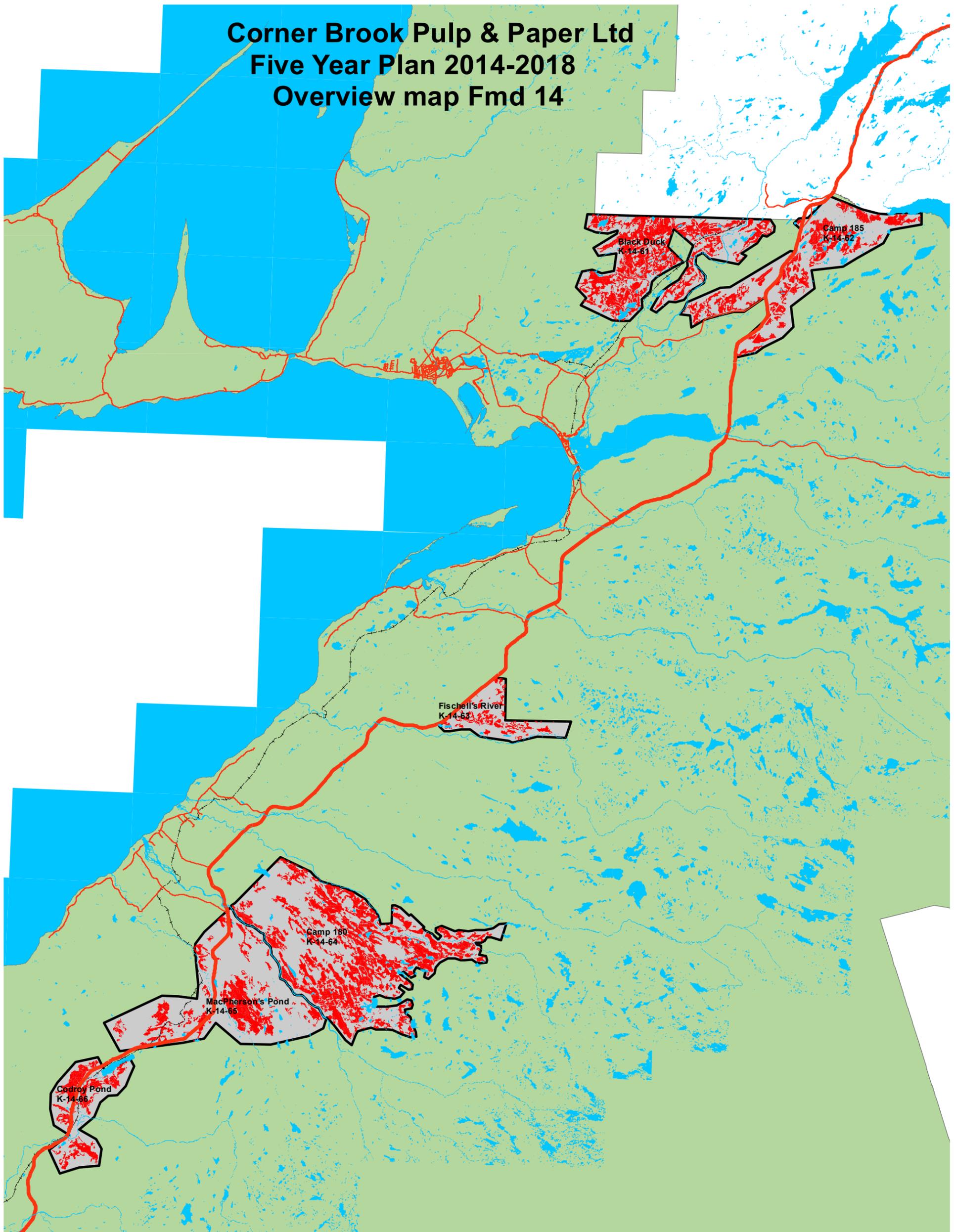
Steward Butland	West Woods Outfitters (Crabbes River Lodge)

Planning team members for Zone 6

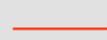
Name	Affiliation
Bert Frampton	Forest Service
Jamie Kennedy	Forest Service
Jeri Graham	Parks and Natural Areas
Tim Moulton, Barry Elkins	CBPPL
Damien Morrissey	Crown Lands
Kirby Way	Mines and Energy
Paul Taylor	Tourism
Kirsten Miller	IFWD
Dean MacDonald	outfitter
Wayne Hounsell	public

**Appendix 3**  
**Operating Area Maps and Descriptions for District 14**

# Corner Brook Pulp & Paper Ltd Five Year Plan 2014-2018 Overview map Fmd 14



## Legend

-  TCH
-  Paved Roads
-  T' Railway Provincial Park
-  Five Year Plan Operating Areas
-  Waterbodies

## Five Year Plan Operating Areas

- K-14-61 Black Duck
- K-14-62 Camp 185
- K-14-63 Fischell's River
- K-14-64 Camp 180
- K-14-65 MacPherson's Pond
- K-14-66 Codroy Pond



**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Black Duck</u>	<b>Inventory Map #:</b>	<u>082</u>
<b>Harvest Area #:</b>	<u>K-14-61</u>	<b>NTS Map #:</b>	<u>12B09</u>

<b>Forest Inventory</b>					
<b>Gross</b>		<b>Net</b>		<b>Working Group</b>	
Volume:	<u>265,703</u> m3	Volume:	217,876 m3	bF:	<u>87.79</u> %
Area:	<u>2,791</u> ha	Area:	1,814 ha	bS:	<u>12.21</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.

Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM Plan visit our website @ <http://www.cbpl.com/>.Boreal standards.



**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Black Duck (K-14-61)**  
Scale 1:50,000

**Forest Inventory Map 082  
NTS Map 12H11, 12B09**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

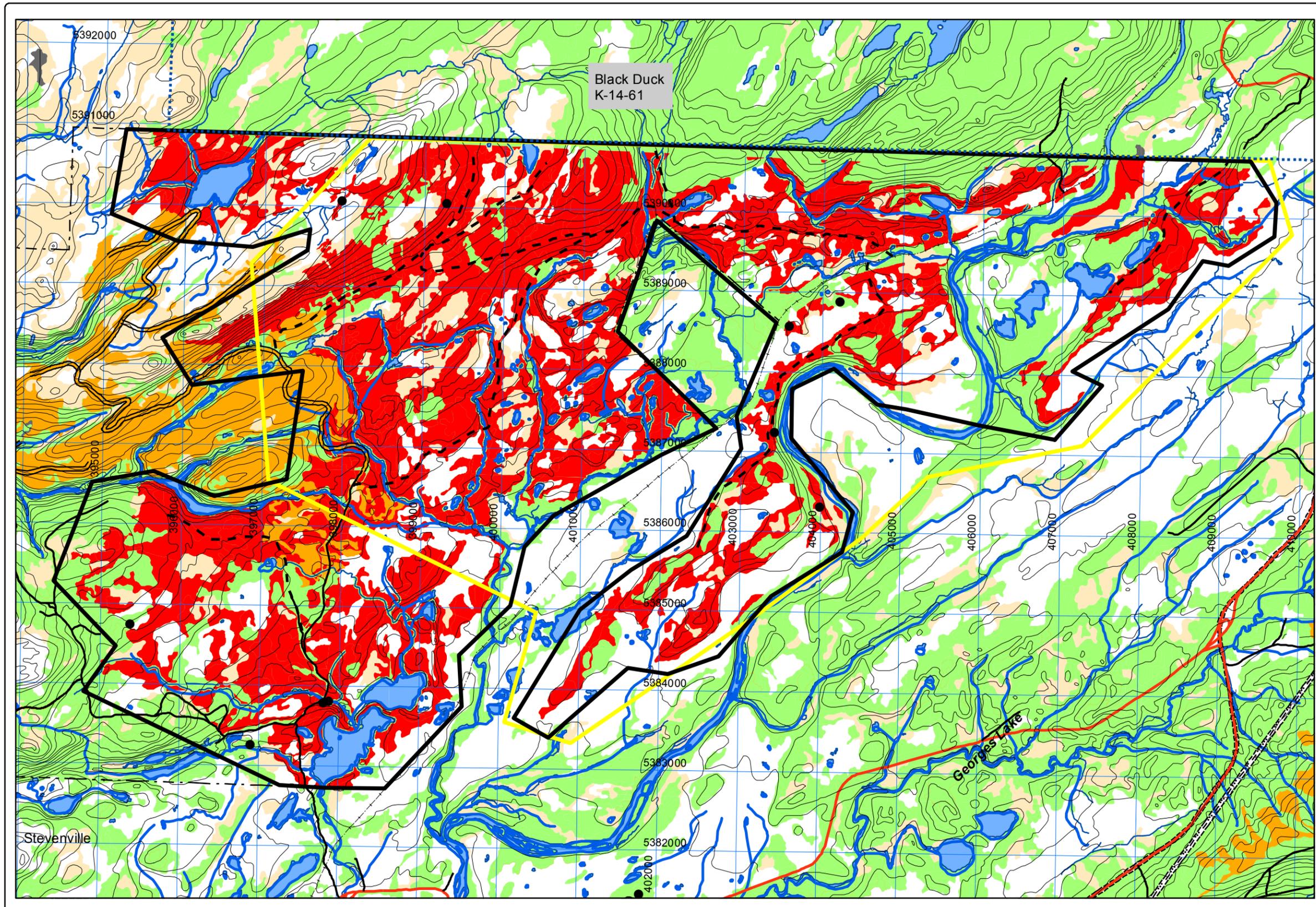
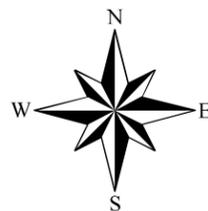
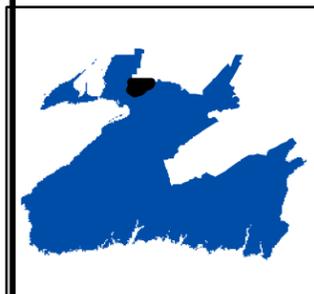
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





# Forest Management District 14 Five Year Plan ( 2014 - 2018 )

## Black Duck Overview (K-14-61)

Scale 1:100,000

### Forest Inventory Map 082

NTS Map 12H11, 12B09

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

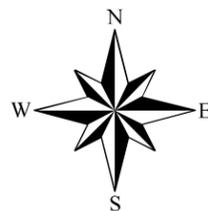
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

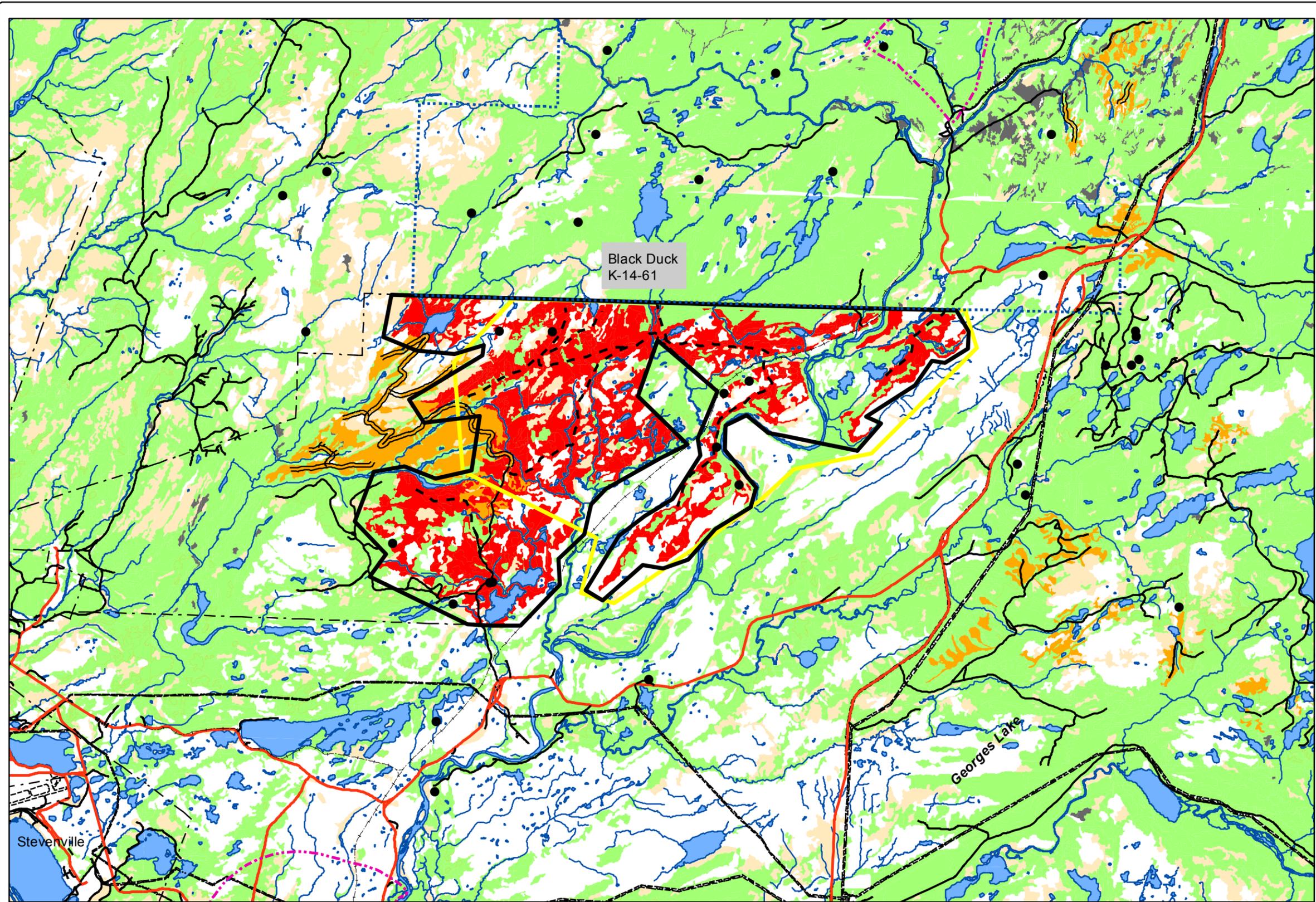
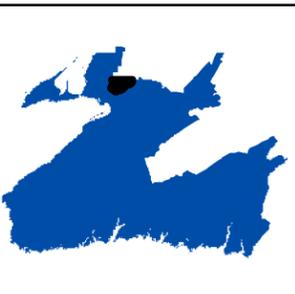
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Camp 185</u>	<b>Inventory Map #:</b>	<u>082</u>
<b>Harvest Area #:</b>	<u>K-14-62</u>	<b>NTS Map #:</b>	<u>12B09</u>

<b>Forest Inventory</b>				<b>Working Group</b>	
<b>Gross</b>		<b>Net</b>			
Volume:	<u>76,569</u> m3	Volume:	62,787 m3	bF:	<u>84.51</u> %
Area:	<u>1,733</u> ha	Area:	1,126 ha	bS:	<u>15.49</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation with the Wildlife Division regarding Caribou populations and habitat, has resulted in mitigative measures being adopted in this Five Year Plan. These measures ensure adequate habitat is maintained in Caribou sensitive areas. A portion of this operating block lies within a Primary and Secondary Core Caribou area. Proposed harvests will follow the Forest management Guidelines for Woodland Caribou as developed by the Department of Environment and Conservation, Wildlife Division.

Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM Plan visit our website @ <http://www.cbppl.com/>.Boreal standards.



**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 185 Overview (K-14-62)  
Scale 1:100,000**

**Forest Inventory Map 082  
NTS Map 12H11, 12B09**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

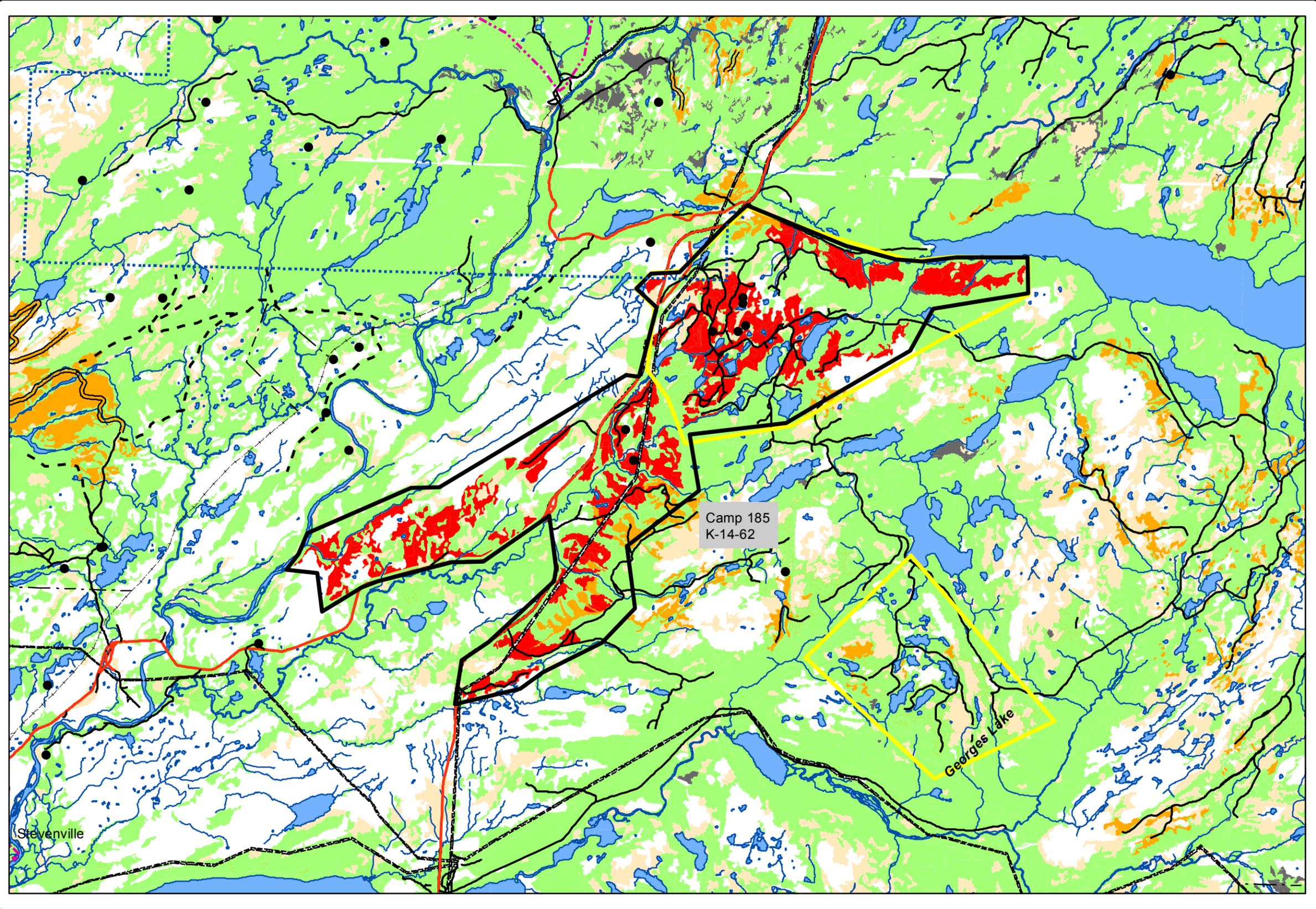
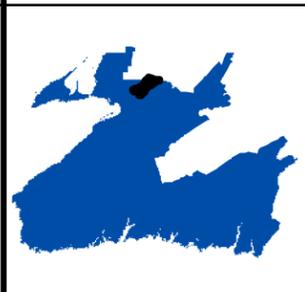
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 185 Map 1 (K-14-62)  
Scale 1:40,000**

**Forest Inventory Map 082  
NTS Map 12H11, 12B09**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

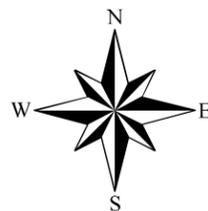
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

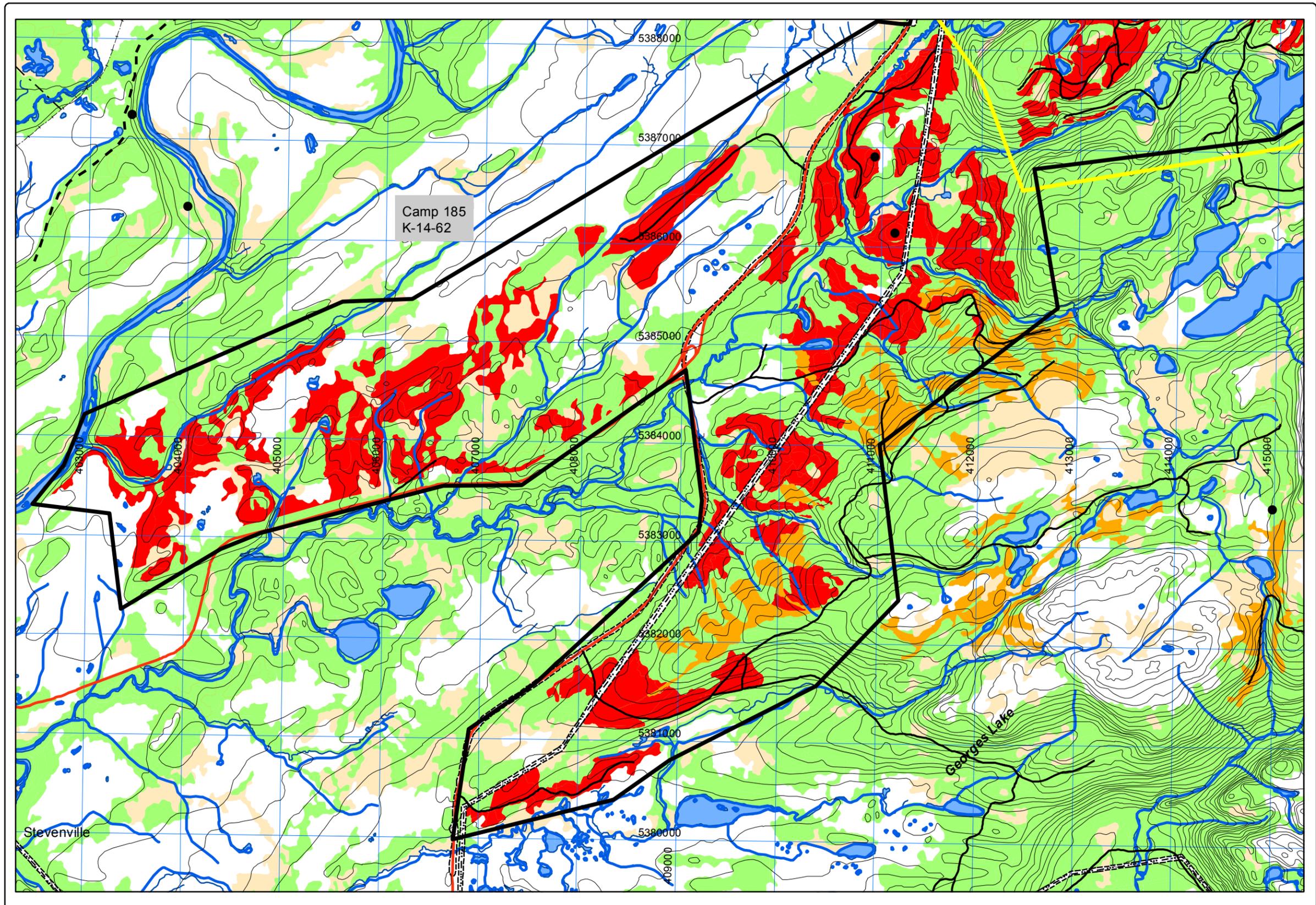
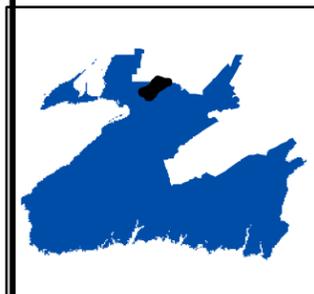
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 185 Map 2 (K-14-62)  
Scale 1:40,000**

**Forest Inventory Map 082  
NTS Map 12H11, 12B09**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

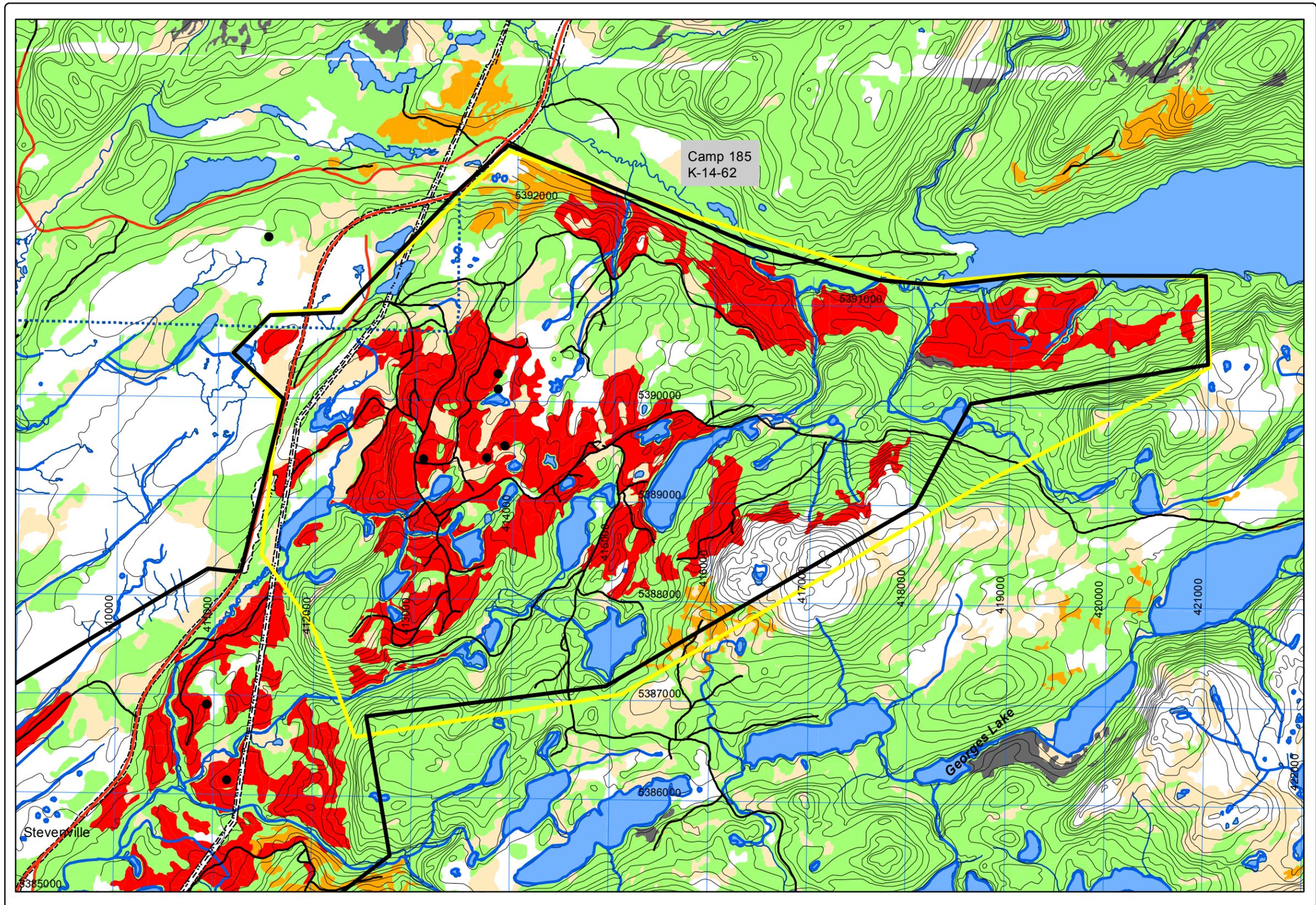
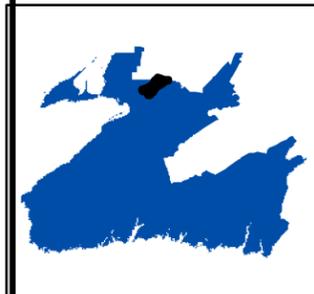
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Fischell's River</u>	<b>Inventory Map #:</b>	<u>094-095</u>
<b>Harvest Area #:</b>	<u>K-14-63</u>	<b>NTS Map #:</b>	<u>12B07, 12B08</u>

<b>Forest Inventory</b>		<b>Net</b>		<b>Working Group</b>	
<b>Gross</b>					
Volume:	<u>31,558</u> m3	Volume:	25,878 m3	bF:	<u>66.06</u> %
Area:	<u>424</u> ha	Area:	276 ha	bS:	<u>33.94</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Rolling terrain with moderate slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

<b>Other Considerations and Mitigations:</b>
Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.
Consultation with Parks and Natural Areas has resulted in a deferred "Area of Interest". This deferred area is removed from the harvest schedule for the life of this Five Year Plan. This deferred harvest zone will be re-evaluated during the next Five Year Plan consultations.
Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM Plan visit our website @ <a href="http://www.cbppl.com/">http://www.cbppl.com/</a> .Boreal standards.



**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Fischell's River  
(K-14-63)  
Scale 1:40,000**

**Forest Inventory Map 094, 095  
NTS Map 12B07, 12B08**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

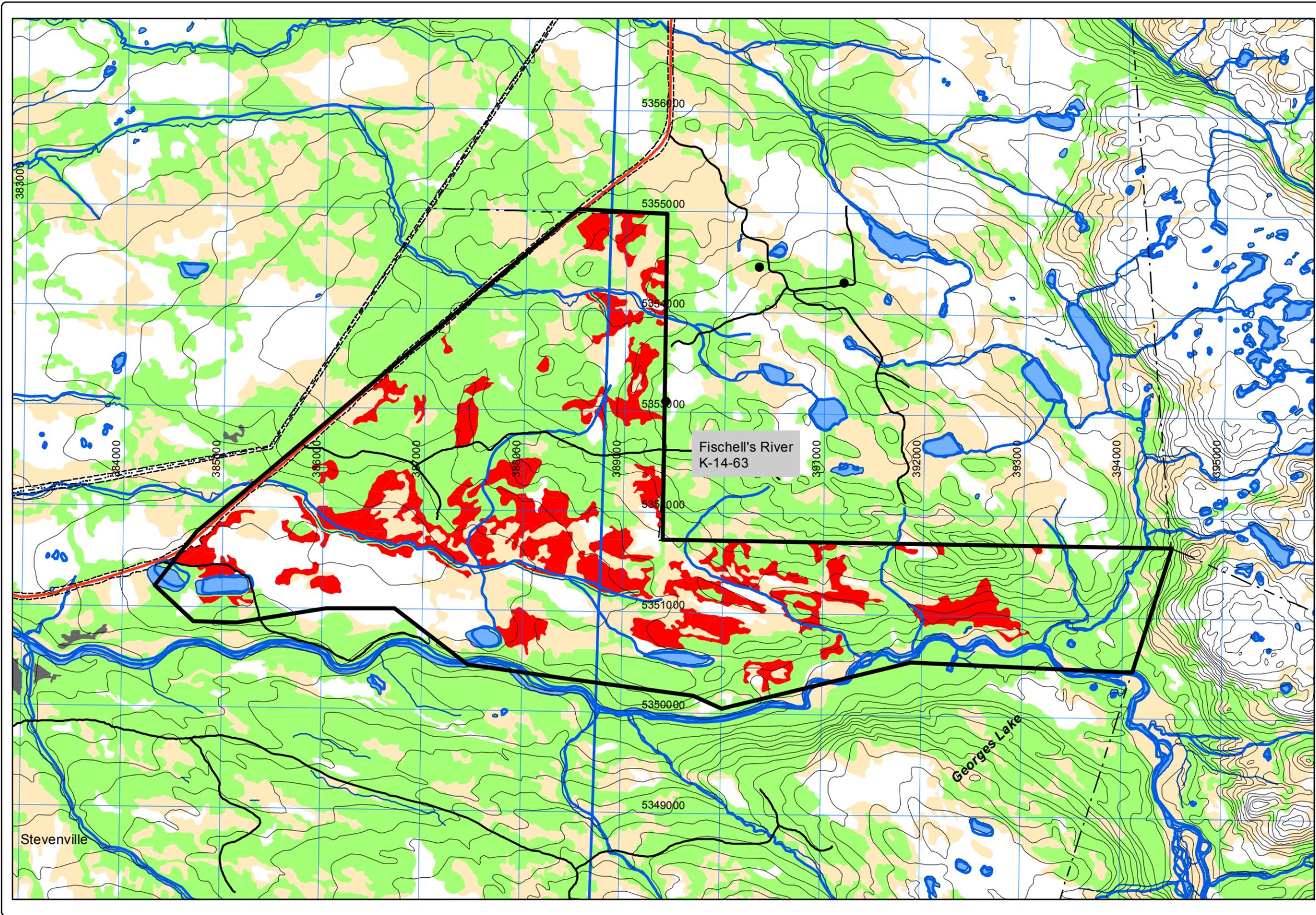
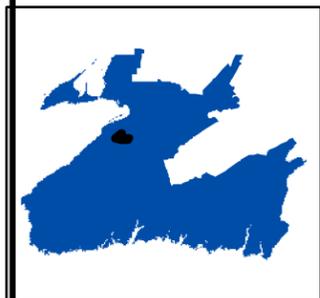
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Fischell's River Overview  
(K-14-63)**

Scale 1:100,000

Forest Inventory Map 094, 095  
NTS Map 12B07, 12B08

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

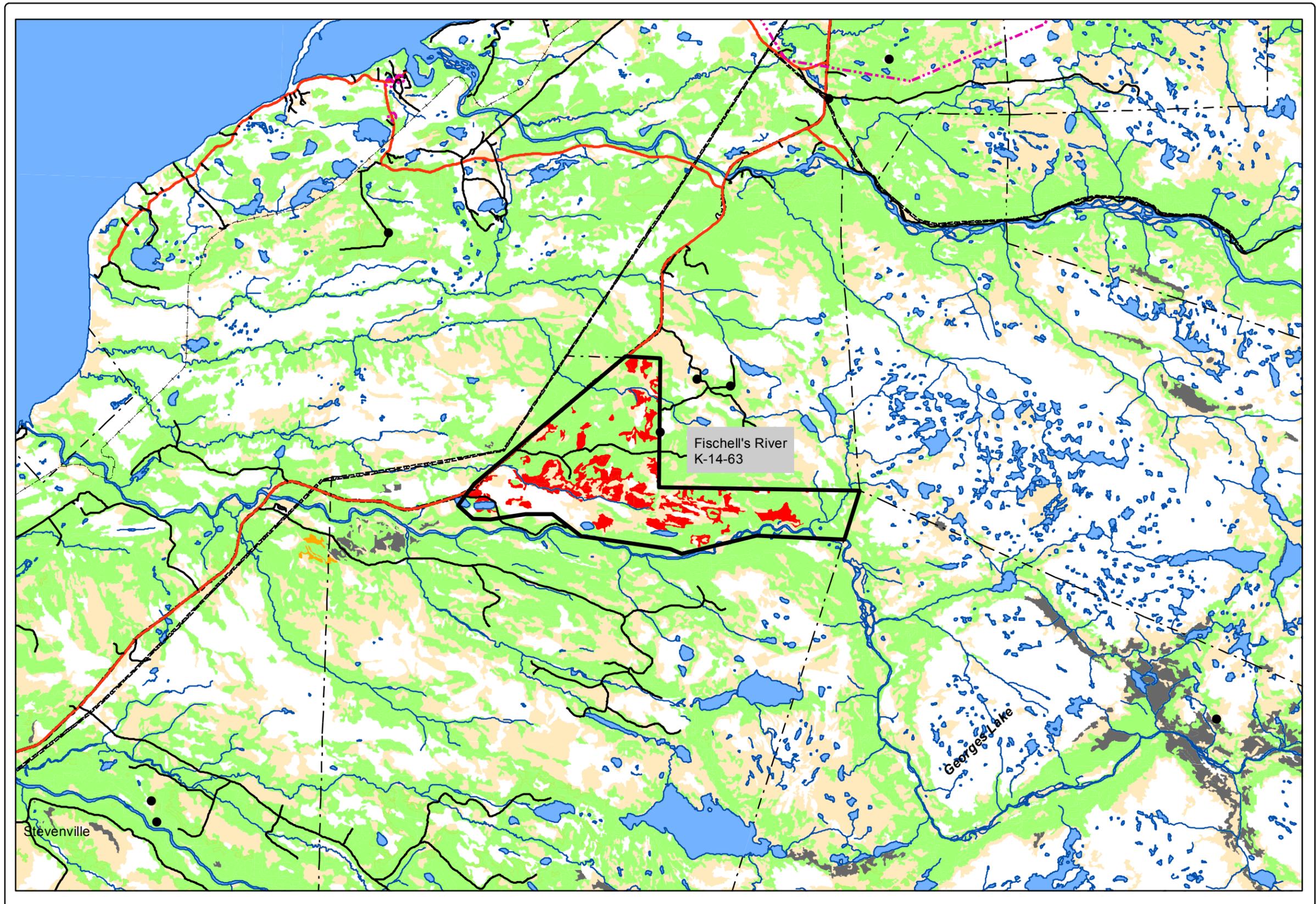
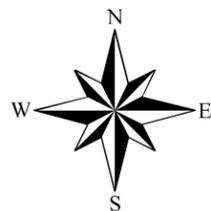
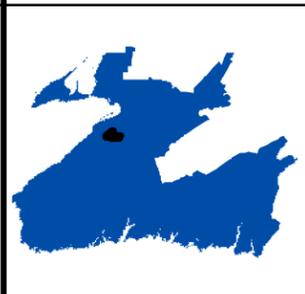
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Camp 180</u>	<b>Inventory Map #:</b>	<u>107</u>
<b>Harvest Area #:</b>	<u>K-14-64</u>	<b>NTS Map #:</b>	<u>12B02</u>

<b>Forest Inventory</b>				<b>Working Group</b>	
<b>Gross</b>		<b>Net</b>			
Volume:	<u>180,691</u> m3	Volume:	148,167 m3	bF:	<u>79.31</u> %
Area:	<u>4,799</u> ha	Area:	3,119 ha	bS:	<u>20.69</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Rolling terrain with moderate slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

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**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 180 Overview (K-14-63)  
Scale 1:100,000**

**Forest Inventory Map 107  
NTS Map 12B07, 12B02**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

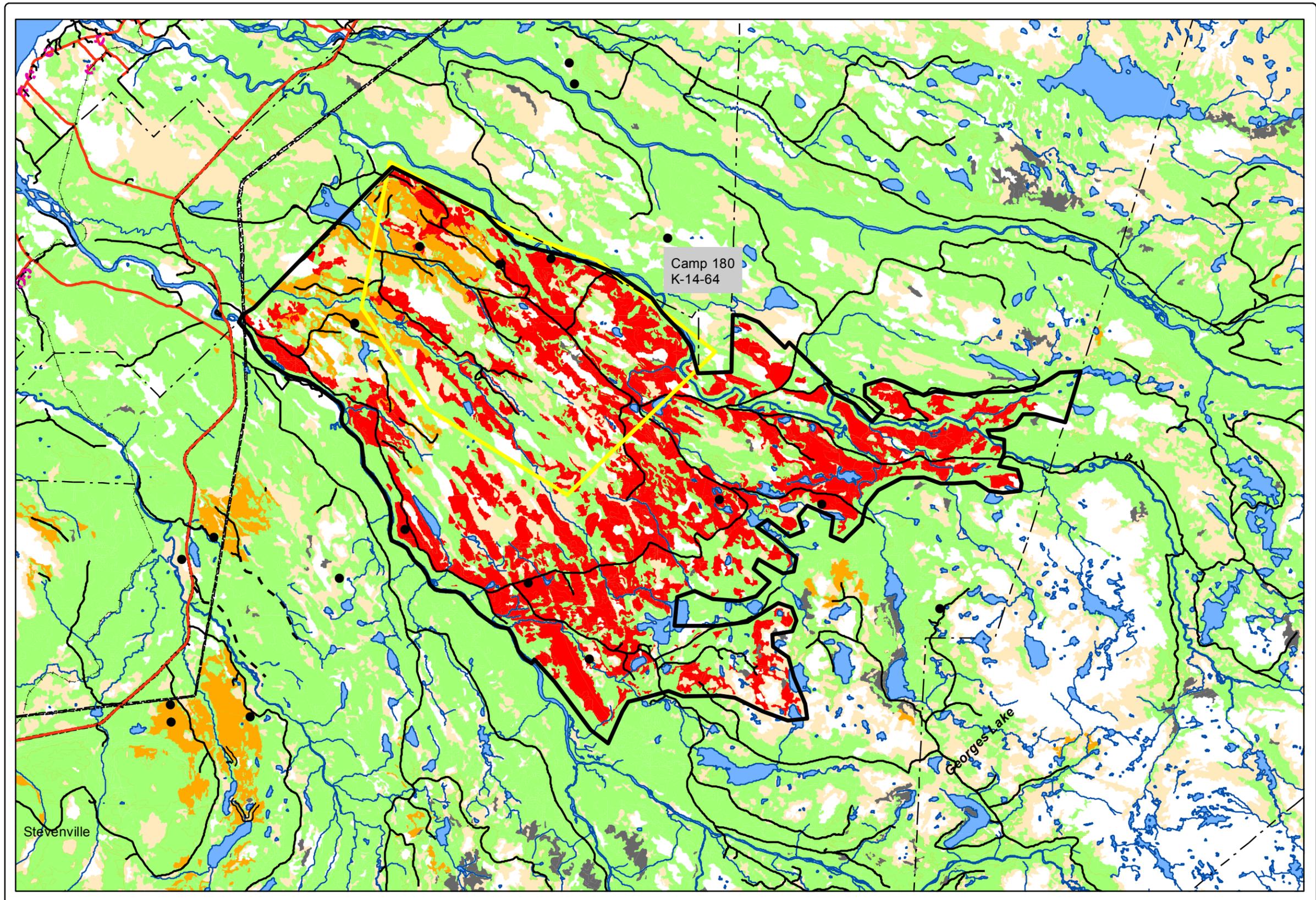
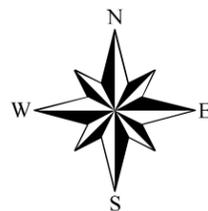
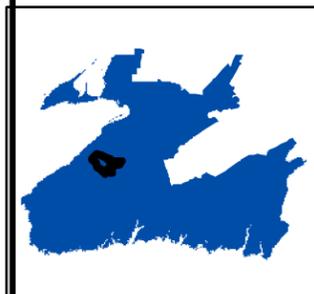
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 180 Map 1 (K-14-64)**  
Scale 1:50,000

**Forest Inventory Map 107**  
**NTS Map 12B07, 12B02**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

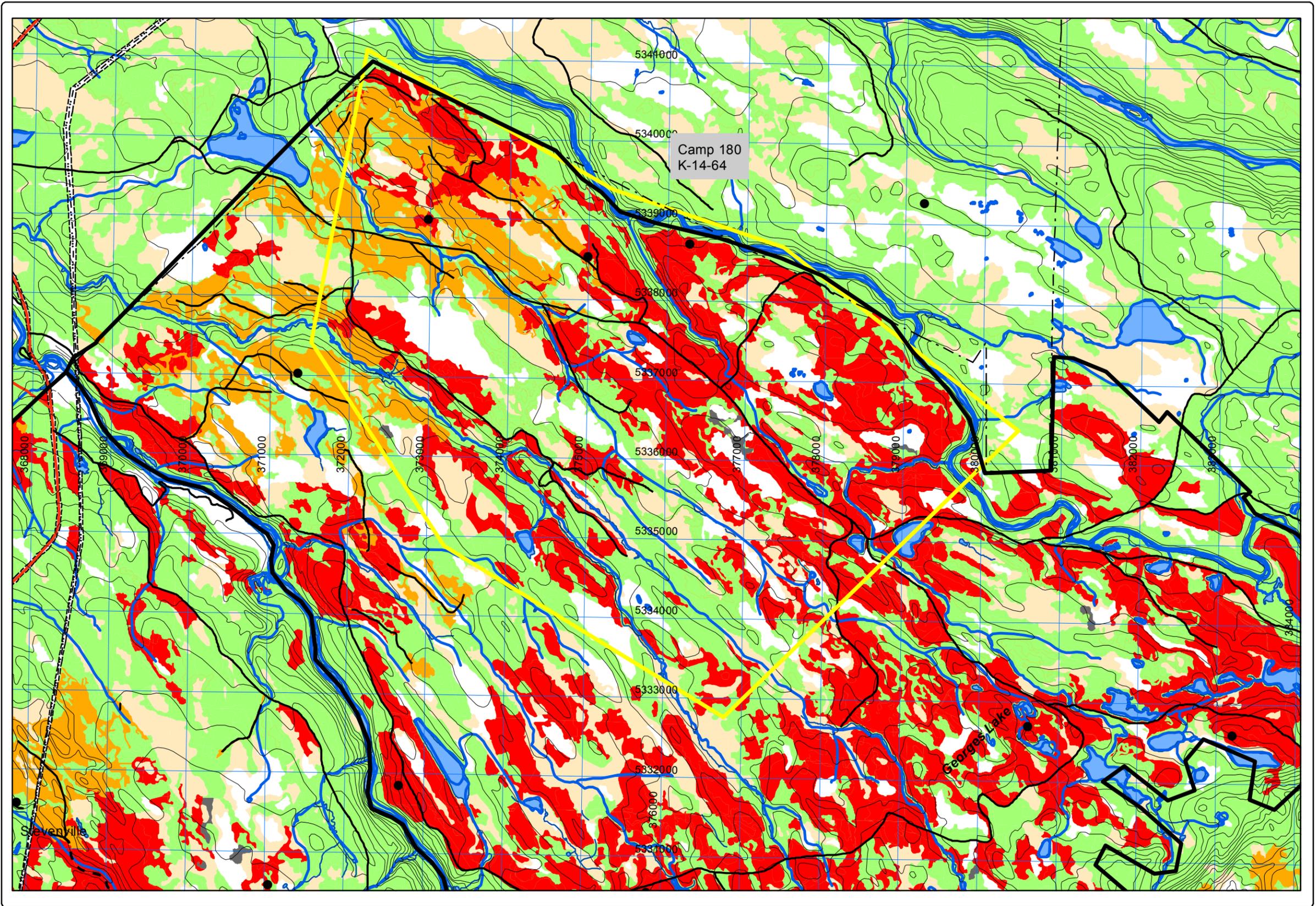
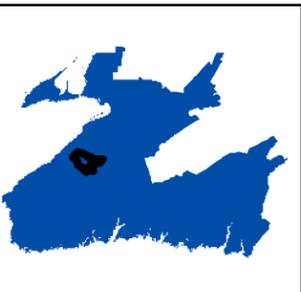
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Camp 180 Map 2 (K-14-64)**  
Scale 1:50,000

**Forest Inventory Map 107**  
**NTS Map 12B07, 12B02**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

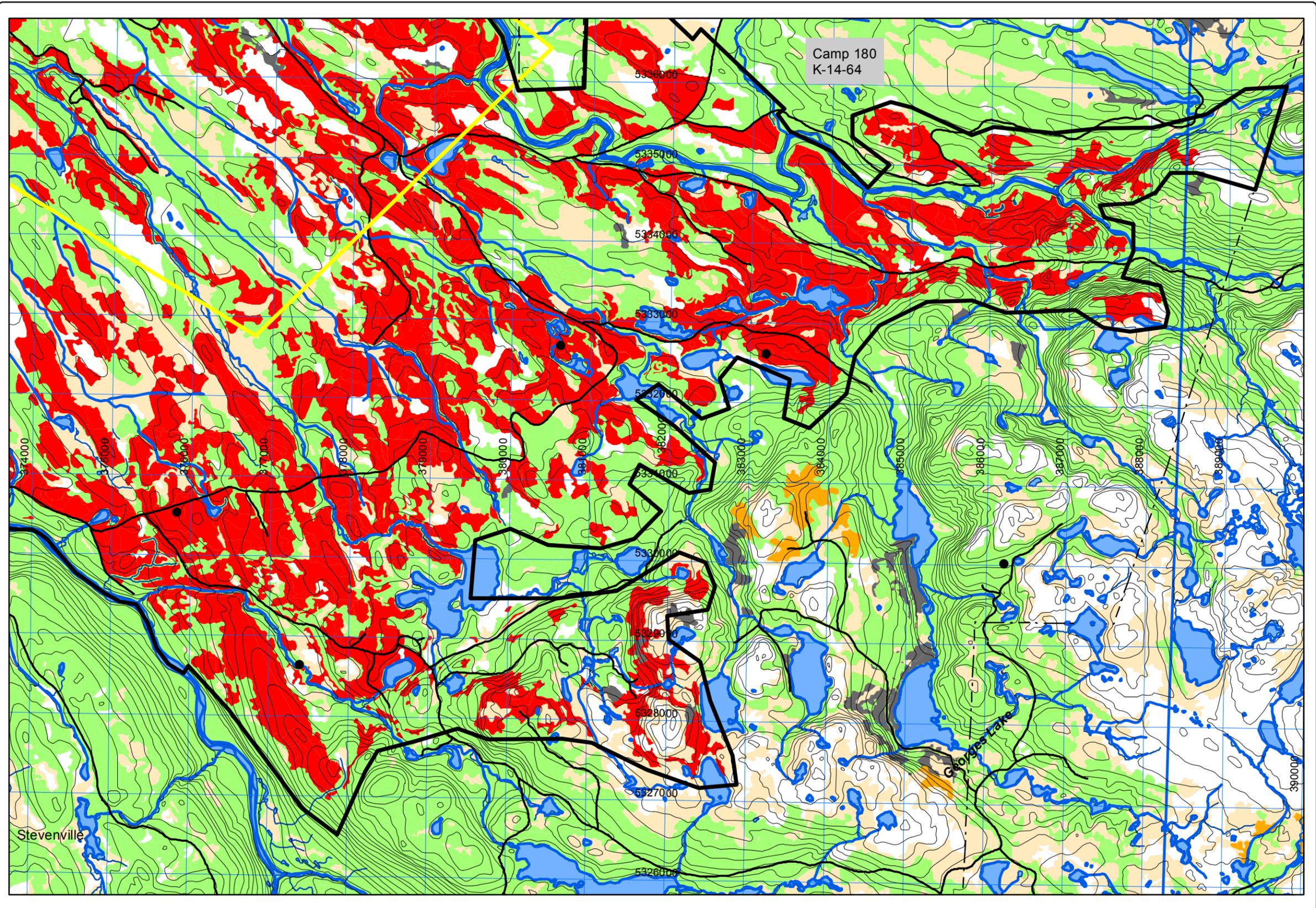
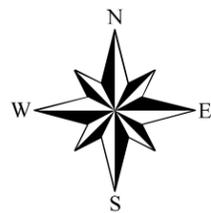
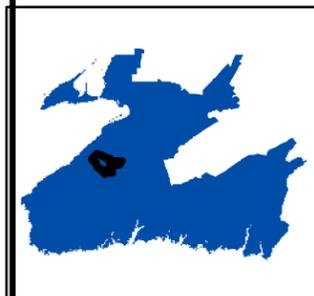
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>MacPherson's Pond</u>	<b>Inventory Map #:</b>	<u>107</u>
<b>Harvest Area #:</b>	<u>K-14-65</u>	<b>NTS Map #:</b>	<u>12B02</u>

<b>Forest Inventory</b>				<b>Working Group</b>	
<b>Gross</b>		<b>Net</b>			
Volume:	<u>113,661</u> m3	Volume:	93,202 m3	bF:	<u>84.84</u> %
Area:	<u>1,547</u> ha	Area:	1,006 ha	bS:	<u>15.16</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

<b>Other Considerations and Mitigations:</b>
Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.
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**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**MacPherson's Pond  
(K-14-65)**

Scale 1:55,000

**Forest Inventory Map 107  
NTS Map 12B02**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

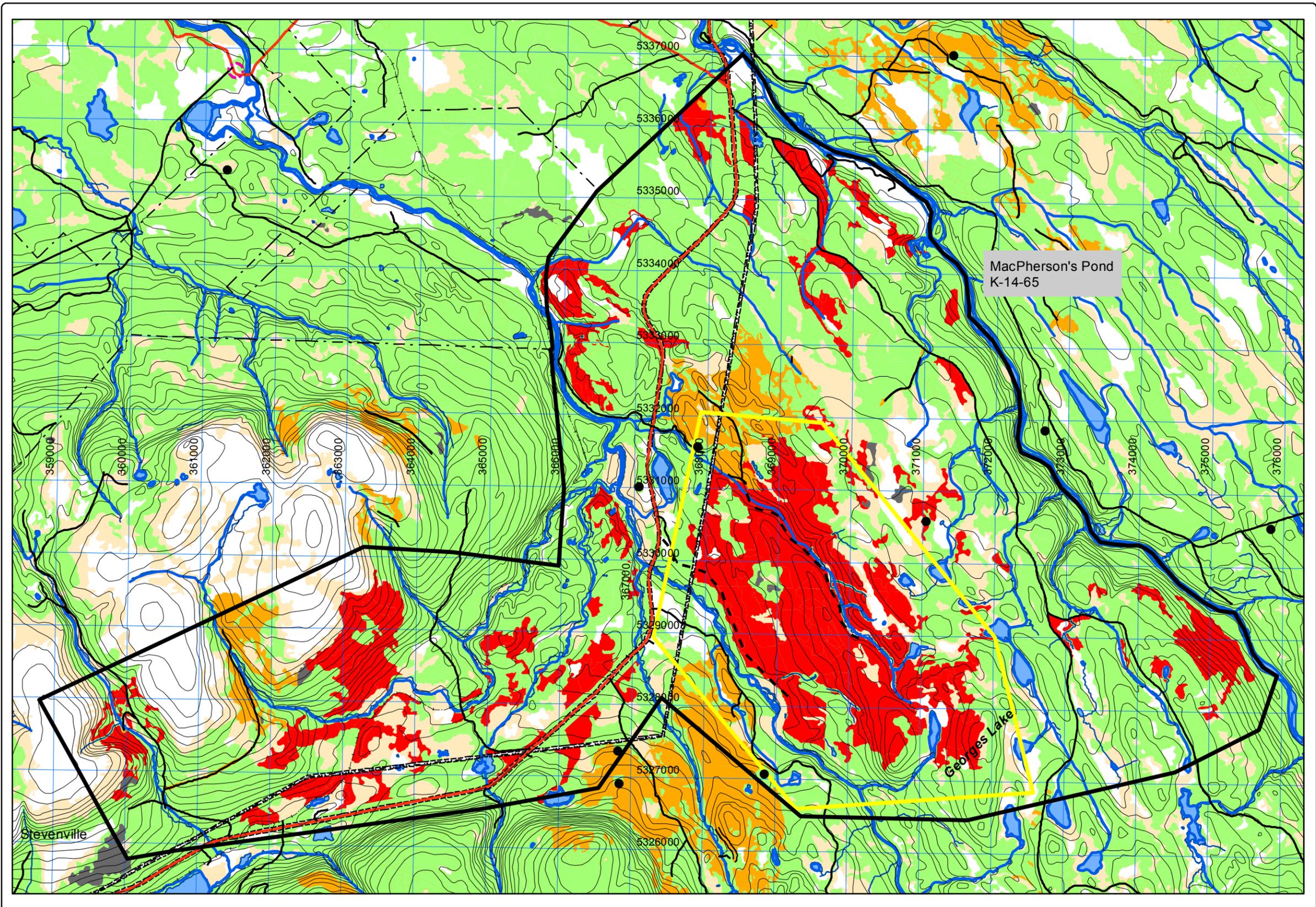
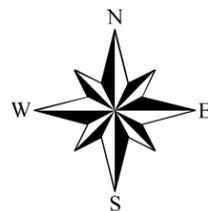
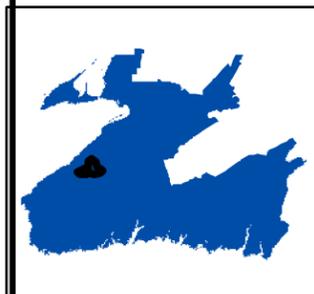
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**MacPherson's Pond Overview  
(K-14-65)**

Scale 1:100,000

**Forest Inventory Map 107  
NTS Map 12B02**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

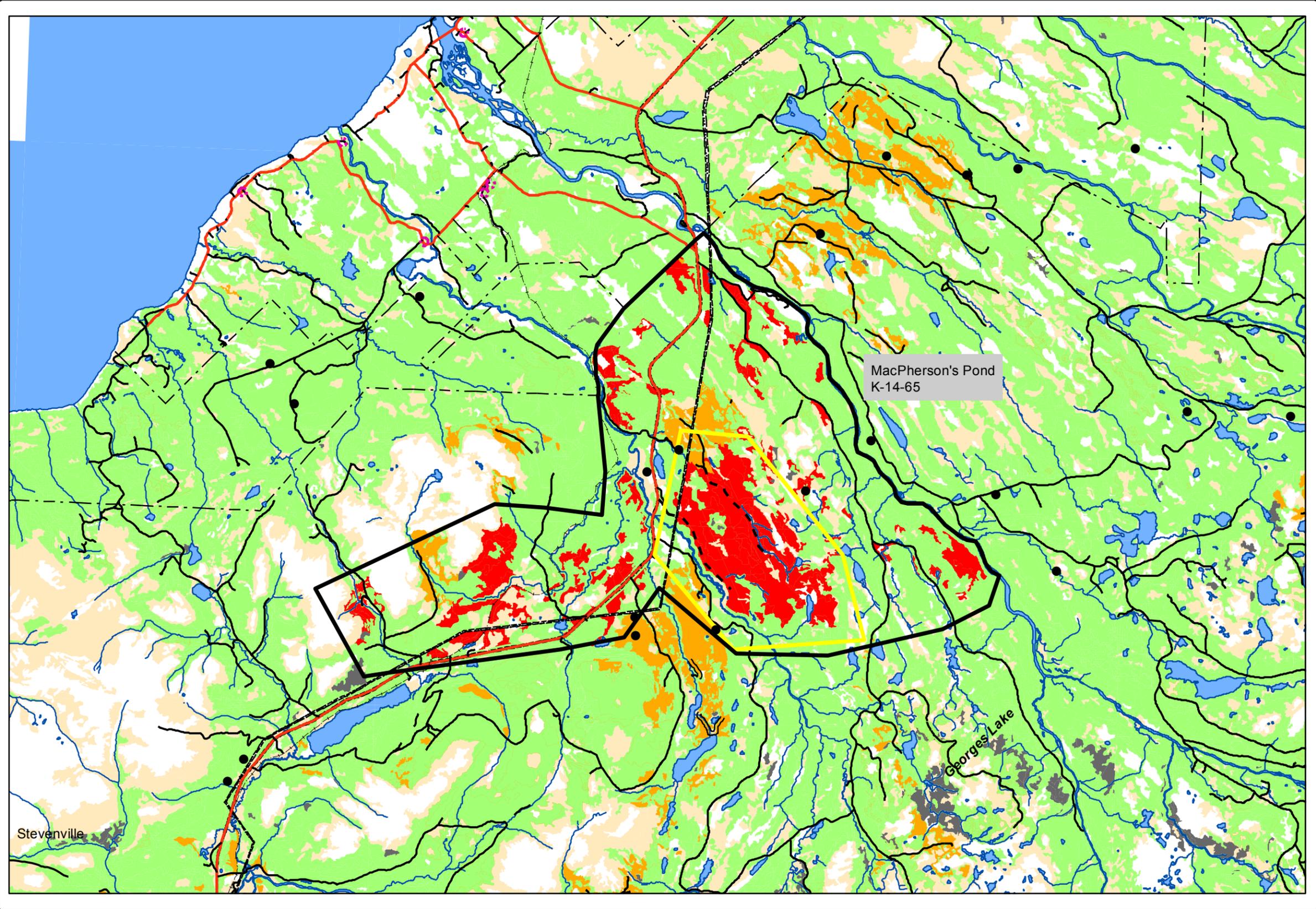
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>14</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Codroy Pond</u>	<b>Inventory Map #:</b>	<u>107</u>
<b>Harvest Area #:</b>	<u>K-14-66</u>	<b>NTS Map #:</b>	<u>12B02</u>

<b>Forest Inventory</b>		<b>Net</b>		<b>Working Group</b>	
<b>Gross</b>					
Volume:	<u>63,121</u> m3	Volume:	51,759 m3	bF:	<u>89.32</u> %
Area:	<u>861</u> ha	Area:	560 ha	bS:	<u>10.68</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

<b>Other Considerations and Mitigations:</b>
Consultation was held with all outfitters in Fmd 14. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the plan.
Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM Plan visit our website @ <a href="http://www.cbppl.com/">http://www.cbppl.com/</a> .Boreal standards.



**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Codroy Pond  
(K-14-66)**

Scale 1:55,000

Forest Inventory Map 107, 121  
NTS Map 12B02, 11O15

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

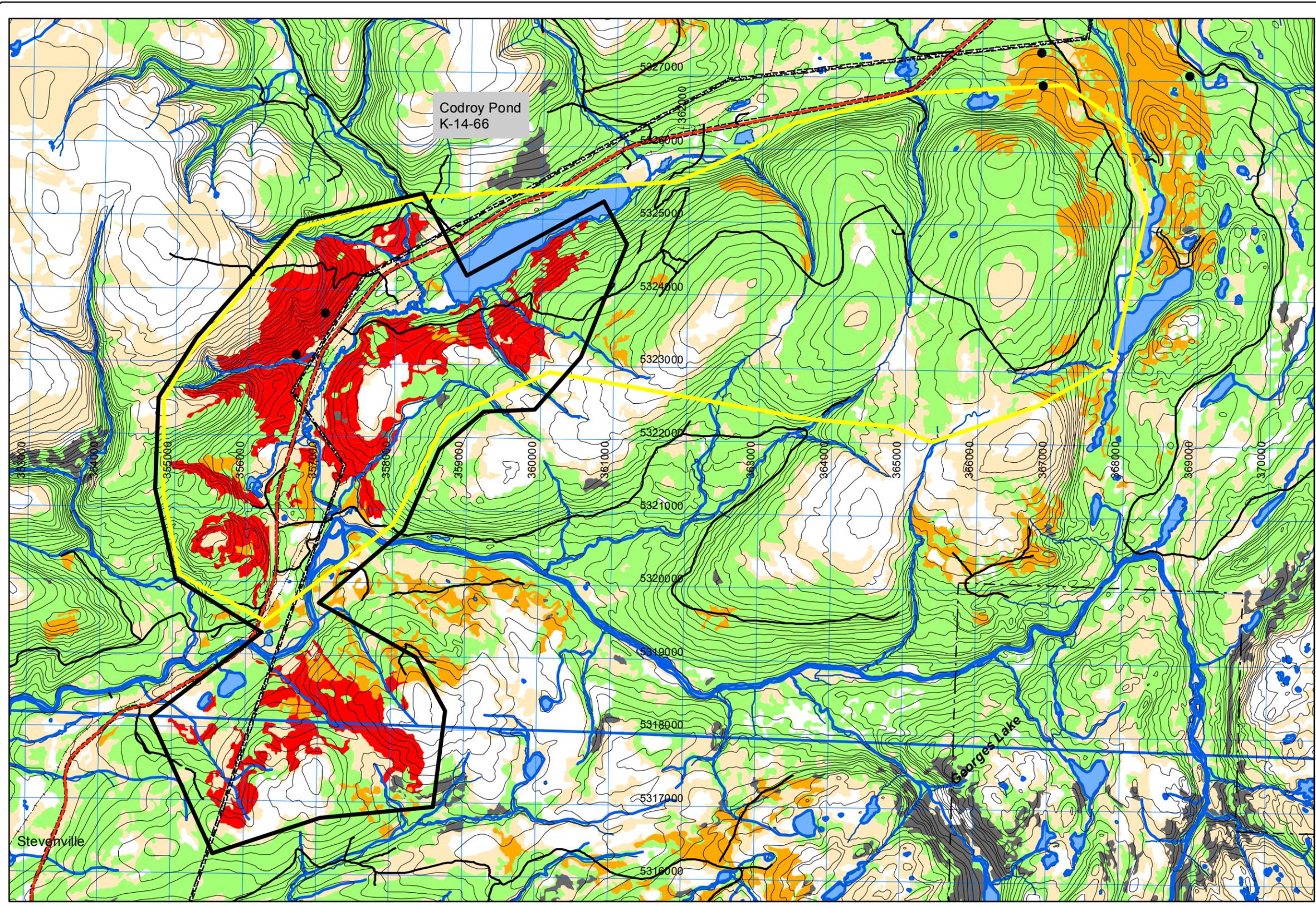
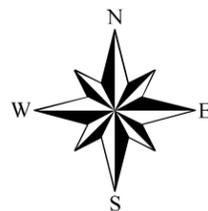
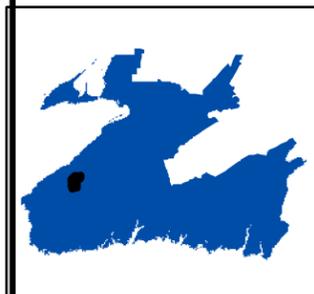
**Land Features**

- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

Inset Map Showing  
Five Year Plan Within District 14





**Forest Management District 14  
Five Year Plan ( 2014 - 2018 )**

**Codroy Pond Overview  
(K-14-66)**

Scale 1:100,000

Forest Inventory Map 107, 121  
NTS Map 12B02, 11O15

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

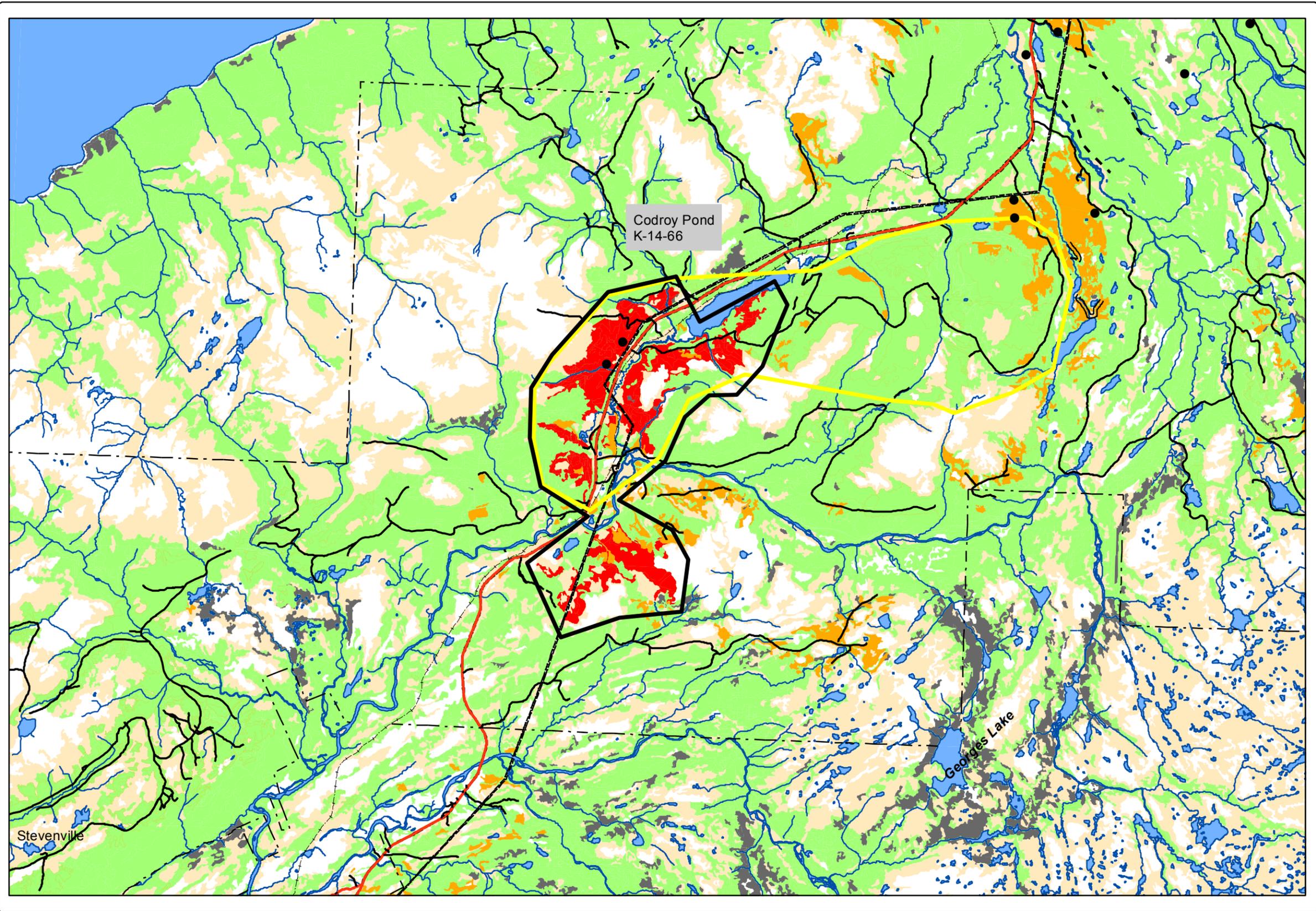
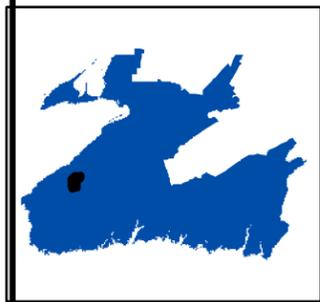
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks

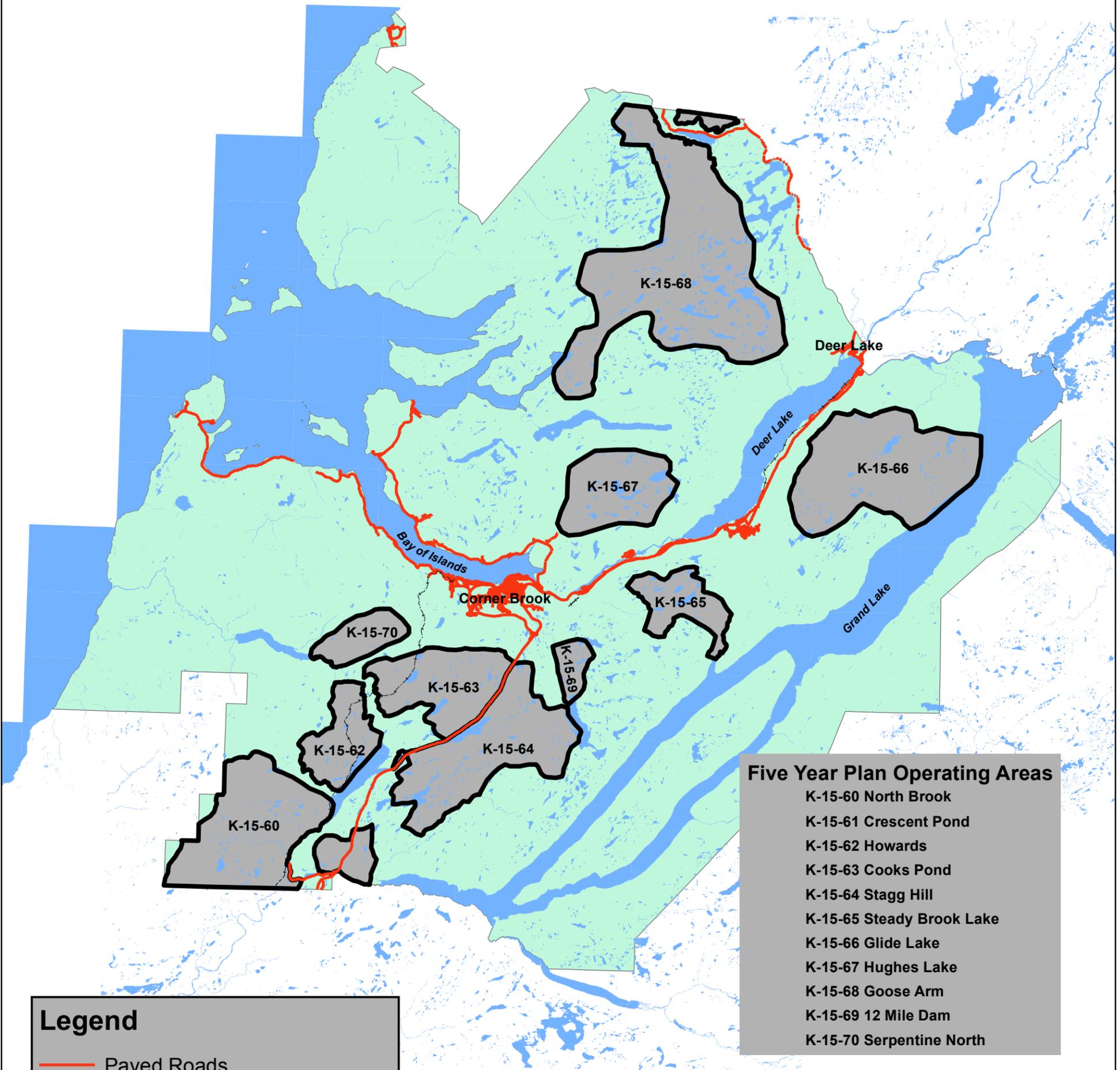


Inset Map Showing  
Five Year Plan Within District 14



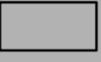
**Appendix 4**  
**Operating Area Maps and Descriptions for District 15**

# Corner Brook Pulp & Paper Ltd Five Year Plan 2014 - 2018 Overview Map Fmd 15



- Five Year Plan Operating Areas**
- K-15-60 North Brook
  - K-15-61 Crescent Pond
  - K-15-62 Howards
  - K-15-63 Cooks Pond
  - K-15-64 Stagg Hill
  - K-15-65 Steady Brook Lake
  - K-15-66 Glide Lake
  - K-15-67 Hughes Lake
  - K-15-68 Goose Arm
  - K-15-69 12 Mile Dam
  - K-15-70 Serpentine North

**Legend**

-  Paved Roads
-  T' Railway Provincial Park
-  Five Year Plan Operating Areas
-  Waterbodies

25  
Kilometers





**CORNER BROOK PULP & PAPER LIMITED**  
**FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** North Brook **Inventory Map #:** 070, 082  
**Harvest Area #:** K-15-60 **NTS Map #:** 12B09, 12B16

**Forest Inventory**

**Gross**

Volume: 713,044 m3  
Area: 5,331 ha

**Net**

Volume: 584,696 m3  
Area: 4,371 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

This operating area is partially contained inside the Protected Water Supply for the Town of Gallants. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## North Brook Overview ( K-15-60 ) Scale 1:70,000

### Forest Inventory Map 070, 082 NTS Map 12B09, 12B16

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

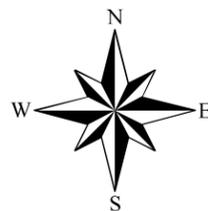
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

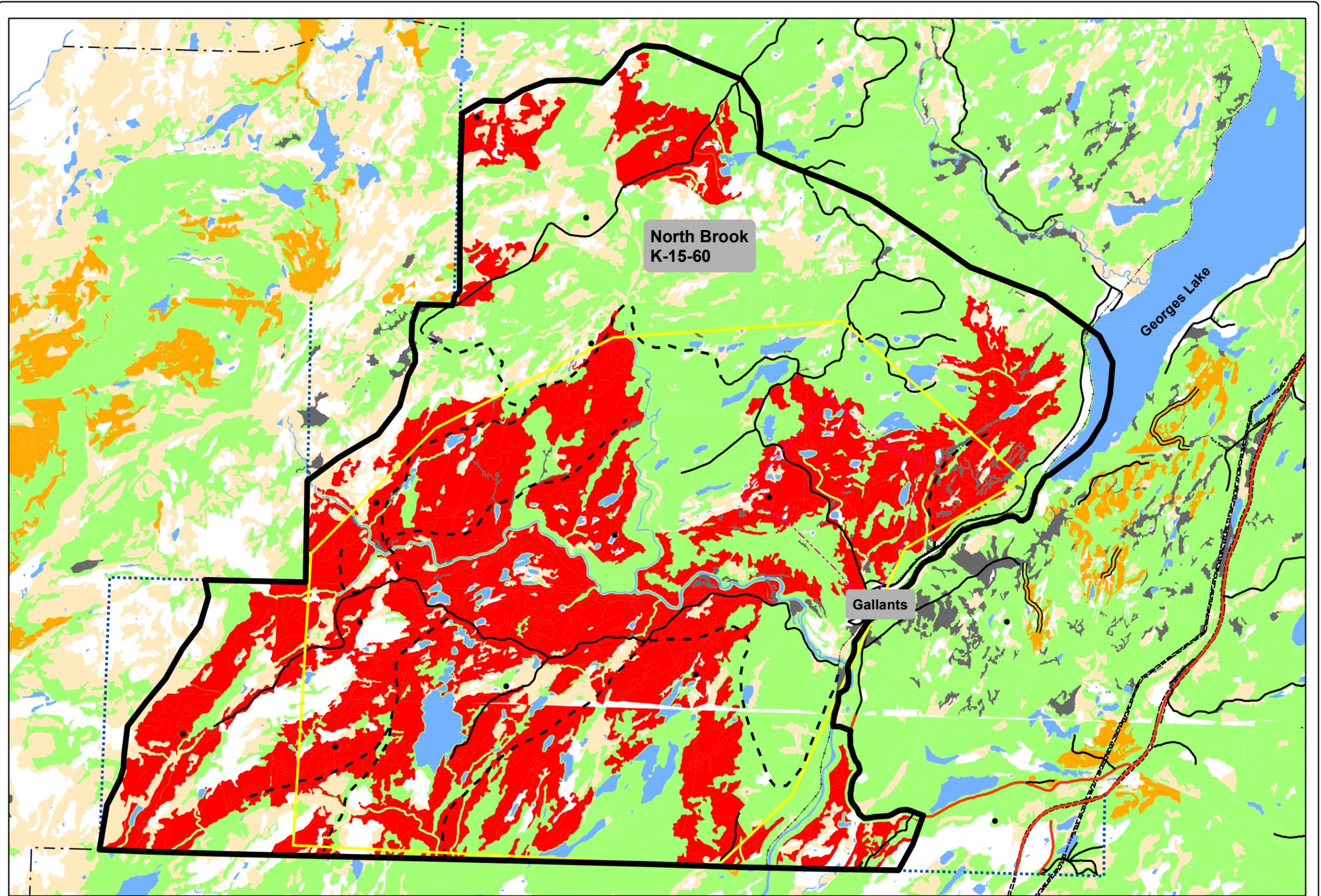
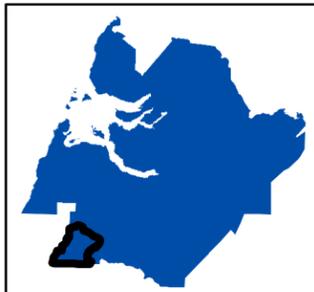
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

North Brook Map 1  
( K-15-60)  
Scale 1:45,000

Forest Inventory Map 070, 082  
NTS Map 12B09, 12B16

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

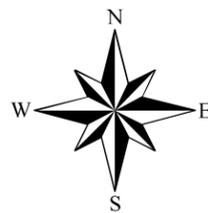
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

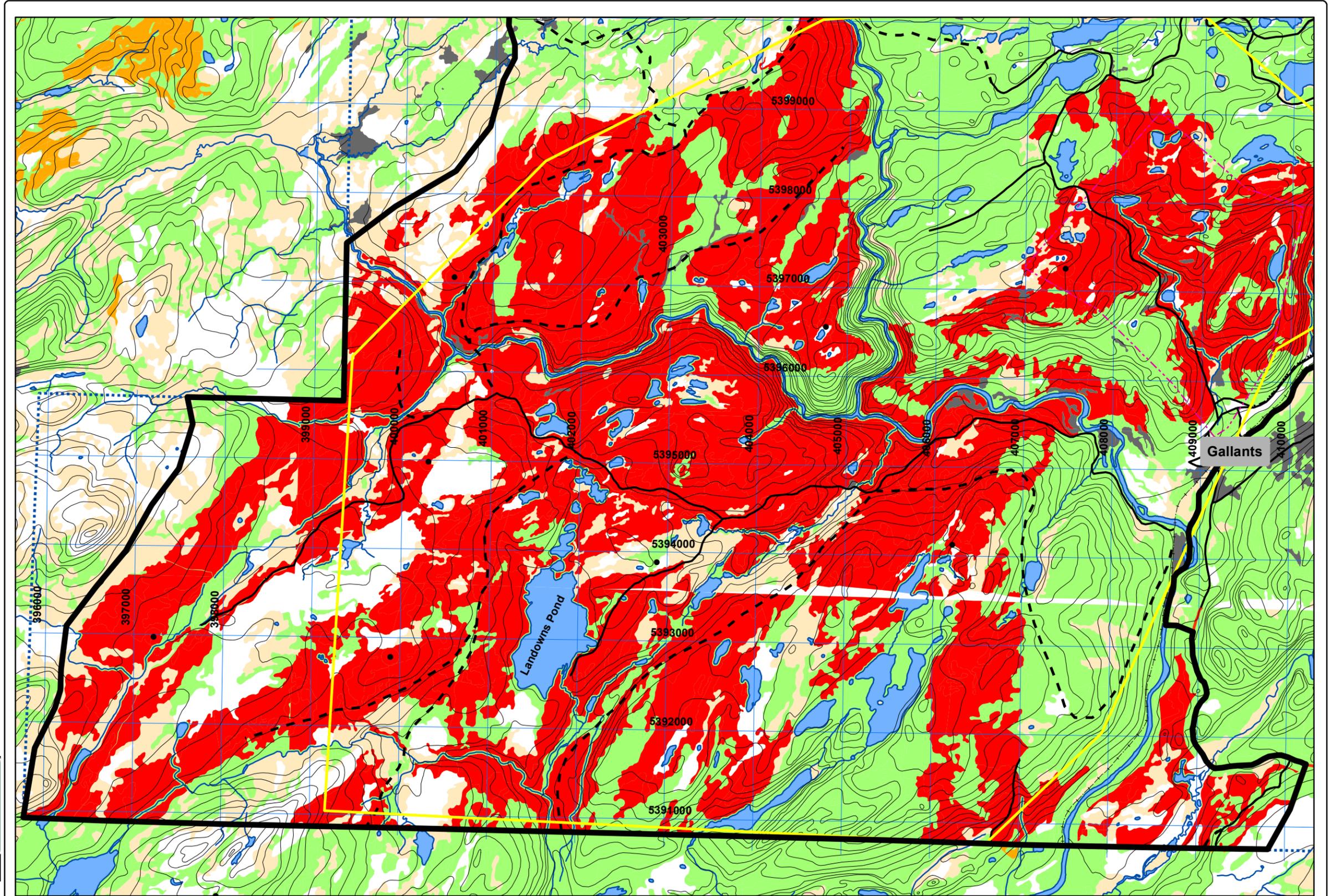
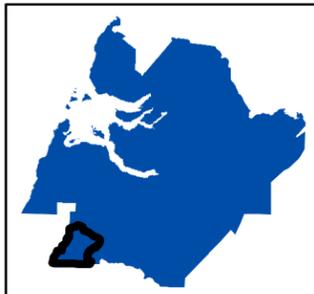
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

North Brook Map 2  
( K-15-60)  
Scale 1:45,000

Forest Inventory Map 070, 082  
NTS Map 12B09, 12B16

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- Railway Provincial Park
- Trails

#### Linear Features

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

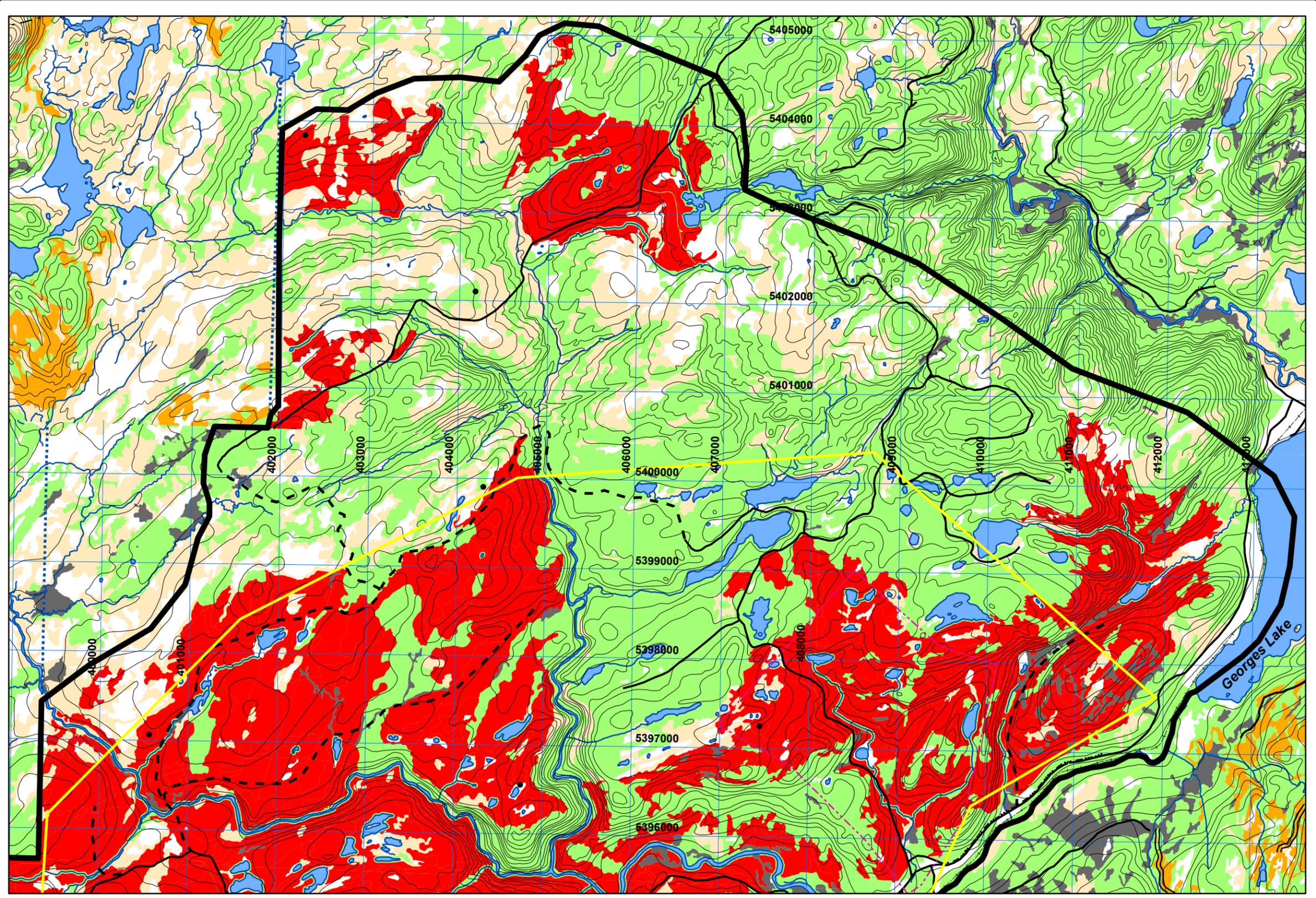
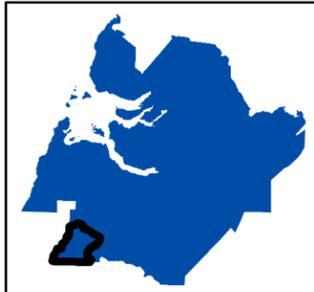
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Crescent Pond **Inventory Map #:** 082  
**Harvest Area #:** K-15-61 **NTS Map #:** 12B09

**Forest Inventory**

**Gross**

Volume: 54,260 m3  
Area: 658 ha

**Net**

Volume: 44,493 m3  
Area: 539 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

A landscape design project during the last Five Year Plan produced a series of no harvest zones along the TCH between Georges Lake and Corner Brook. These no harvest zones (with a few minor adjustments) will be extended to the new Five Year Plan for 2014 - 2018.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Crescent Pond ( K-15-61 ) Scale 1:35,000

### Forest Inventory Map 082 NTS Map 12B09

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

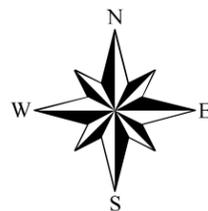
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

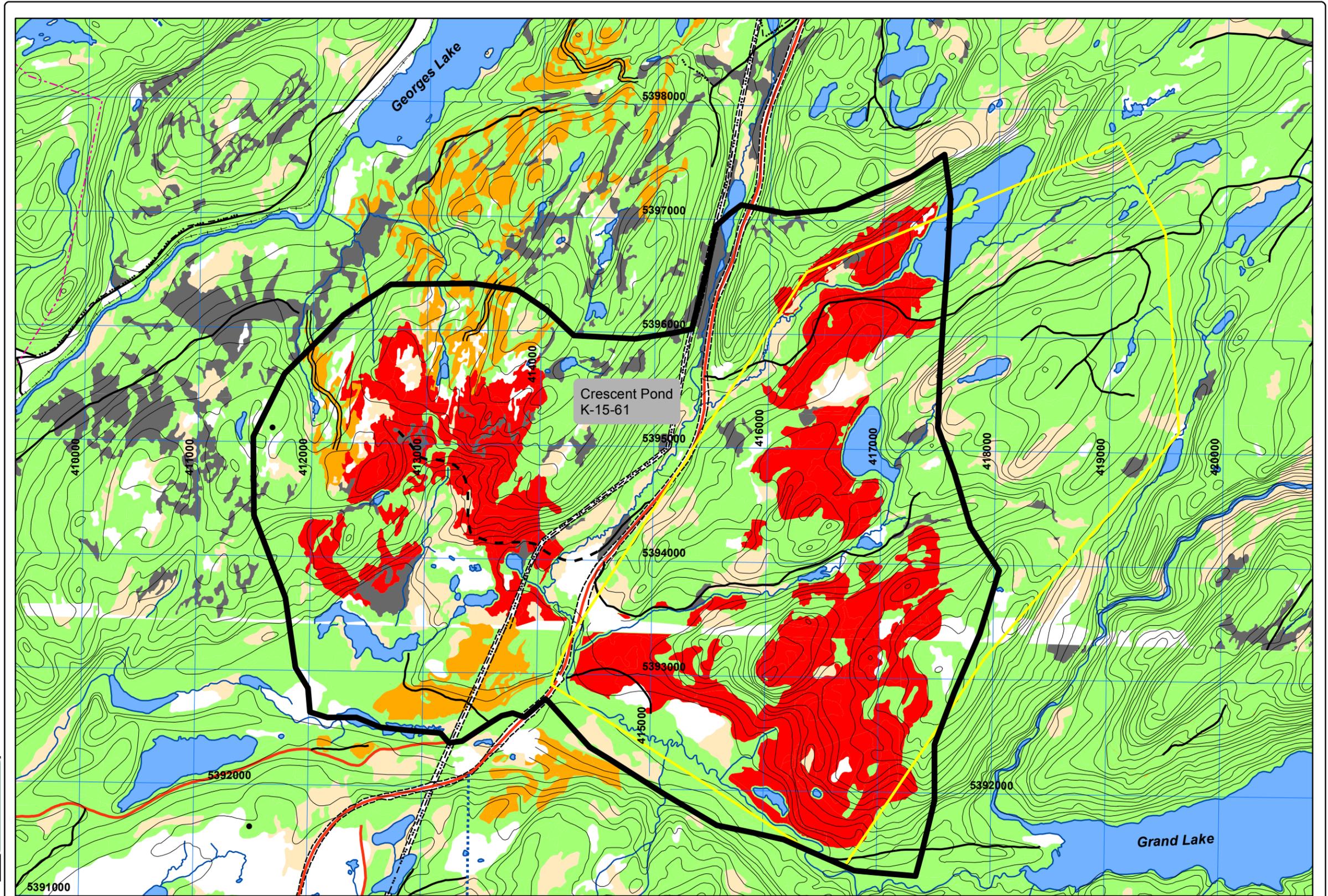
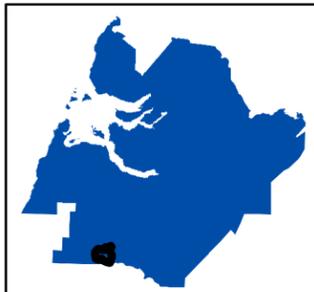
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED**  
**FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Howards **Inventory Map #:** 070  
**Harvest Area #:** K-15-62 **NTS Map #:** 12B16

**Forest Inventory**

**Gross**

Volume: 130,428 m3  
Area: 1,134 ha

**Net**

Volume: 106,950 m3  
Area: 929 ha

**Working Group**

bF: 90 %  
bS: 10 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Howards  
( K-15-62)  
Scale 1:50,000

Forest Inventory Map 070  
NTS Map 12B16

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

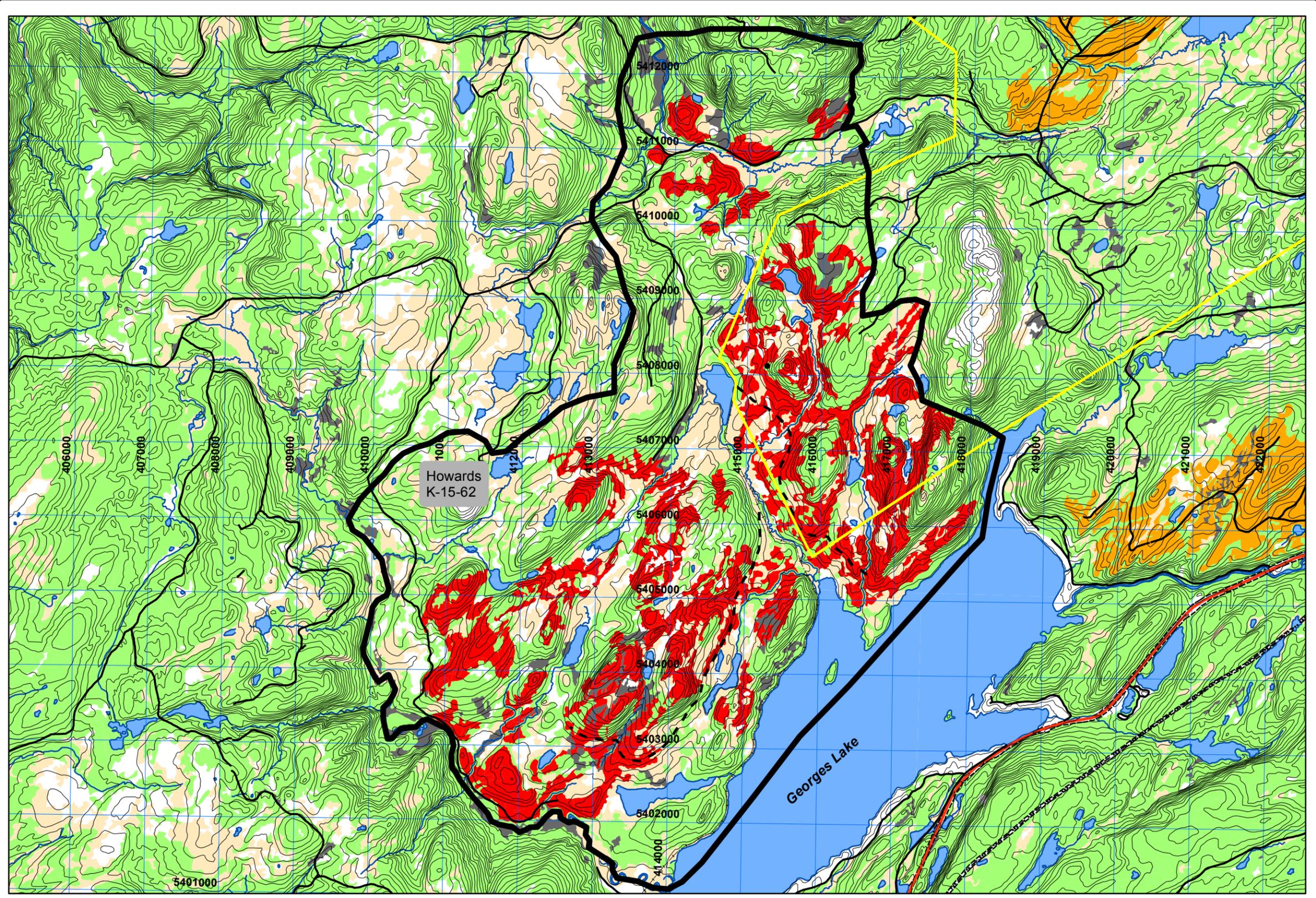
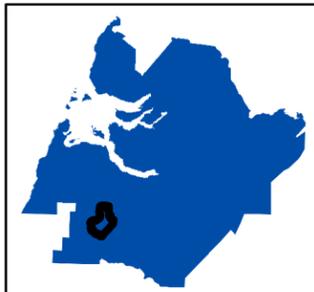
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Cooks Pond **Inventory Map #:** 070, 071  
**Harvest Area #:** K-15-63 **NTS Map #:** 12A13, 12B16

**Forest Inventory**

**Gross**

Volume: 246,713 m3  
Area: 2,190 ha

**Net**

Volume: 202,304 m3  
Area: 1,795 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

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**Forest Management District 15  
Five Year Plan ( 2014 - 2018 )**

**Cooks Pond  
( K-15-63 )  
Scale 1:50,000**

**Forest Inventory Map 070, 071  
NTS Map 12A13, 12B16**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- Railway Provincial Park
- Trails

**Linear Features**

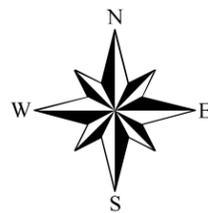
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

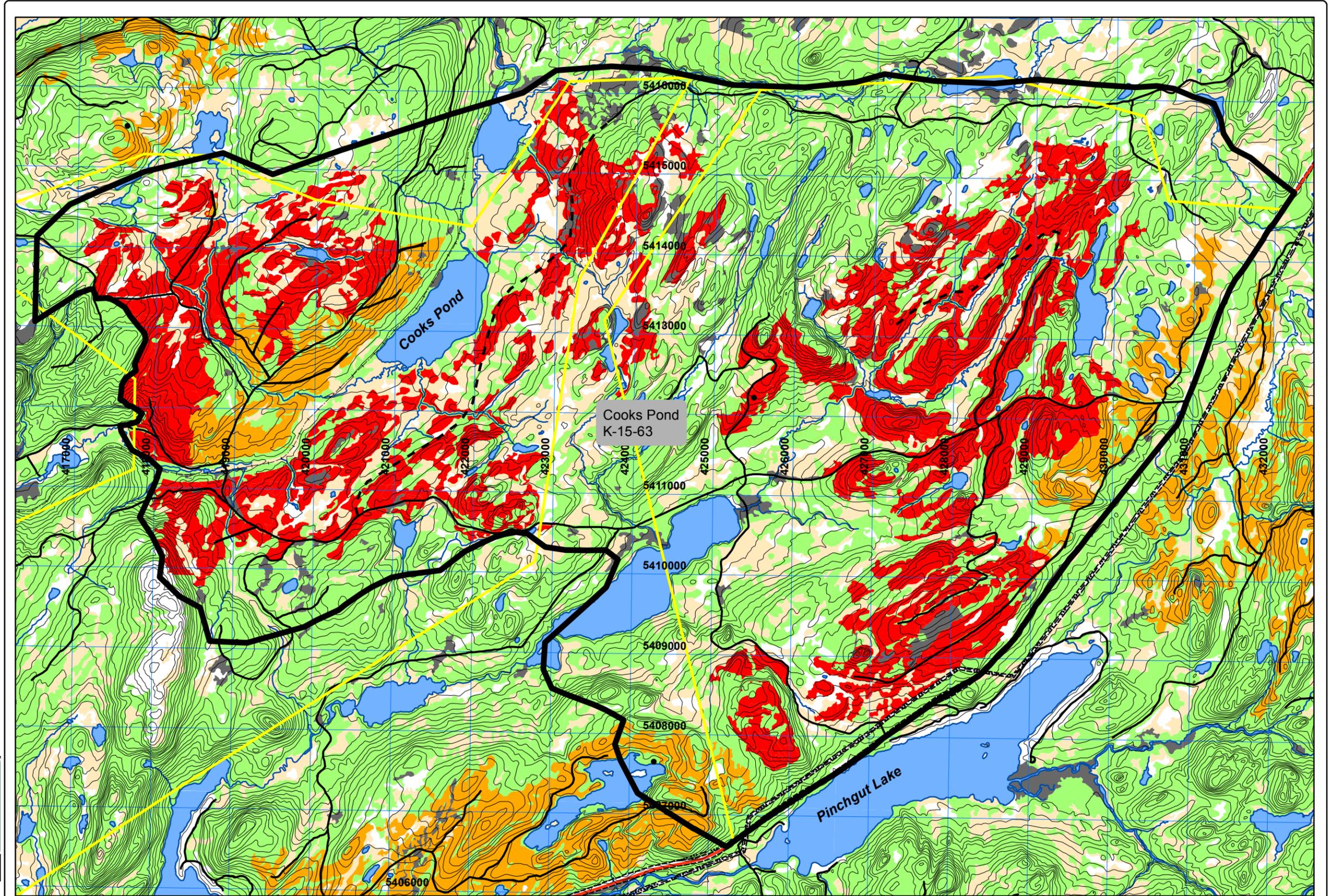
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Stagg Hill **Inventory Map #:** 070, 071  
**Harvest Area #:** K-15-64 **NTS Map #:** 12A13, 12B16

**Forest Inventory**

**Gross**

Volume: 526,061 m3  
Area: 4,599 ha

**Net**

Volume: 431,370 m3  
Area: 3,771 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

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This operating area is partially contained inside the Protected Water Supply for the city of Corner Brook. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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**Forest Management District 15  
Five Year Plan ( 2014 - 2018 )**

**Stagg Hill Overview  
( K-15-64 )**

Scale 1:90,000

Forest Inventory Map 070, 071  
NTS Map 12A13, 12B16

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

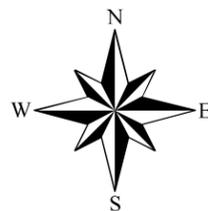
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

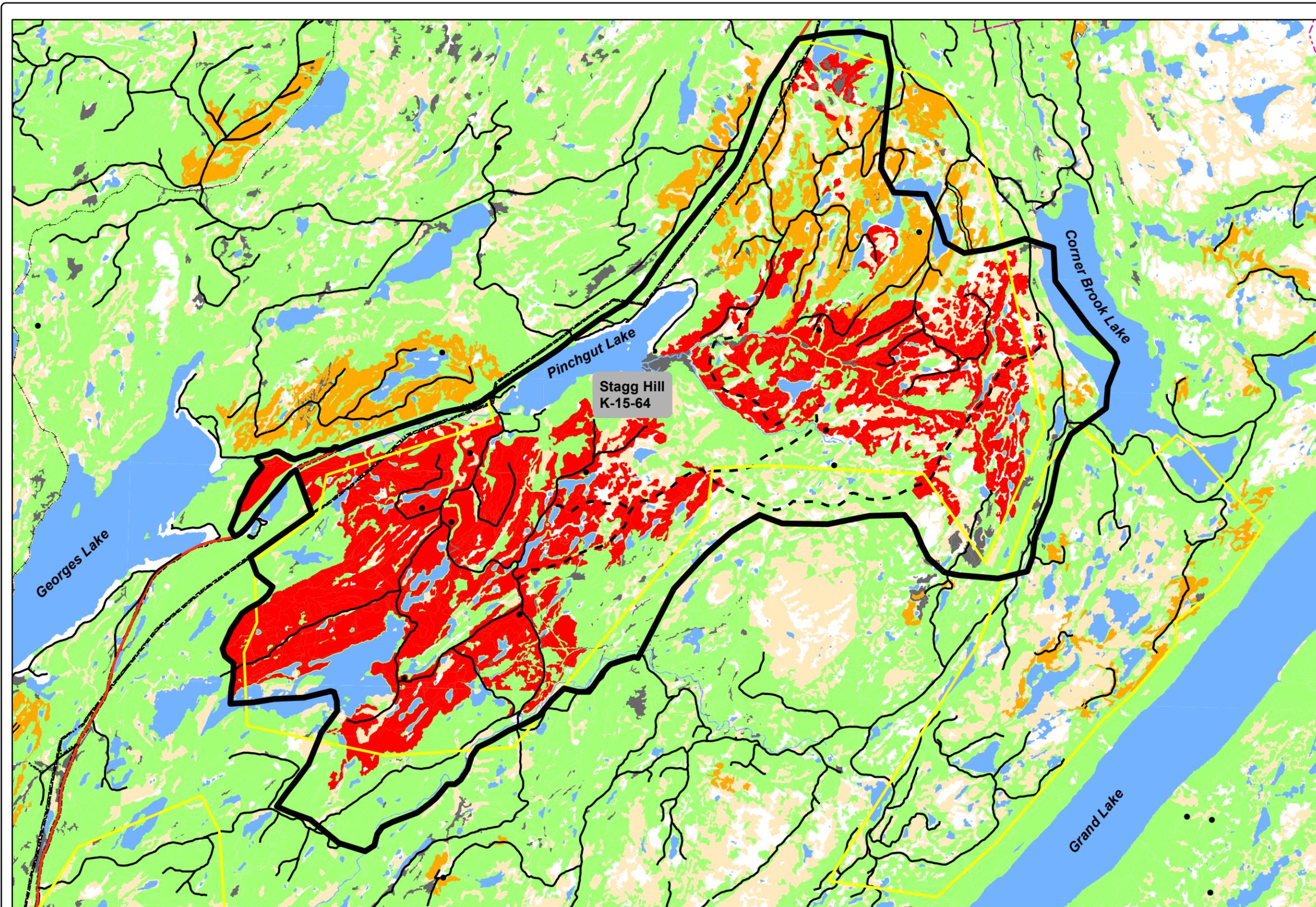
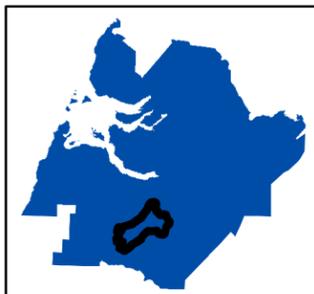
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Stagg Hill Map 1  
( K-15-64)  
Scale 1:60,000

Forest Inventory Map 070, 071  
NTS Map 12A13, 12B16

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

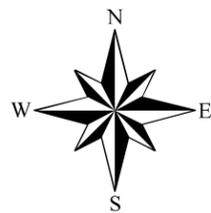
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

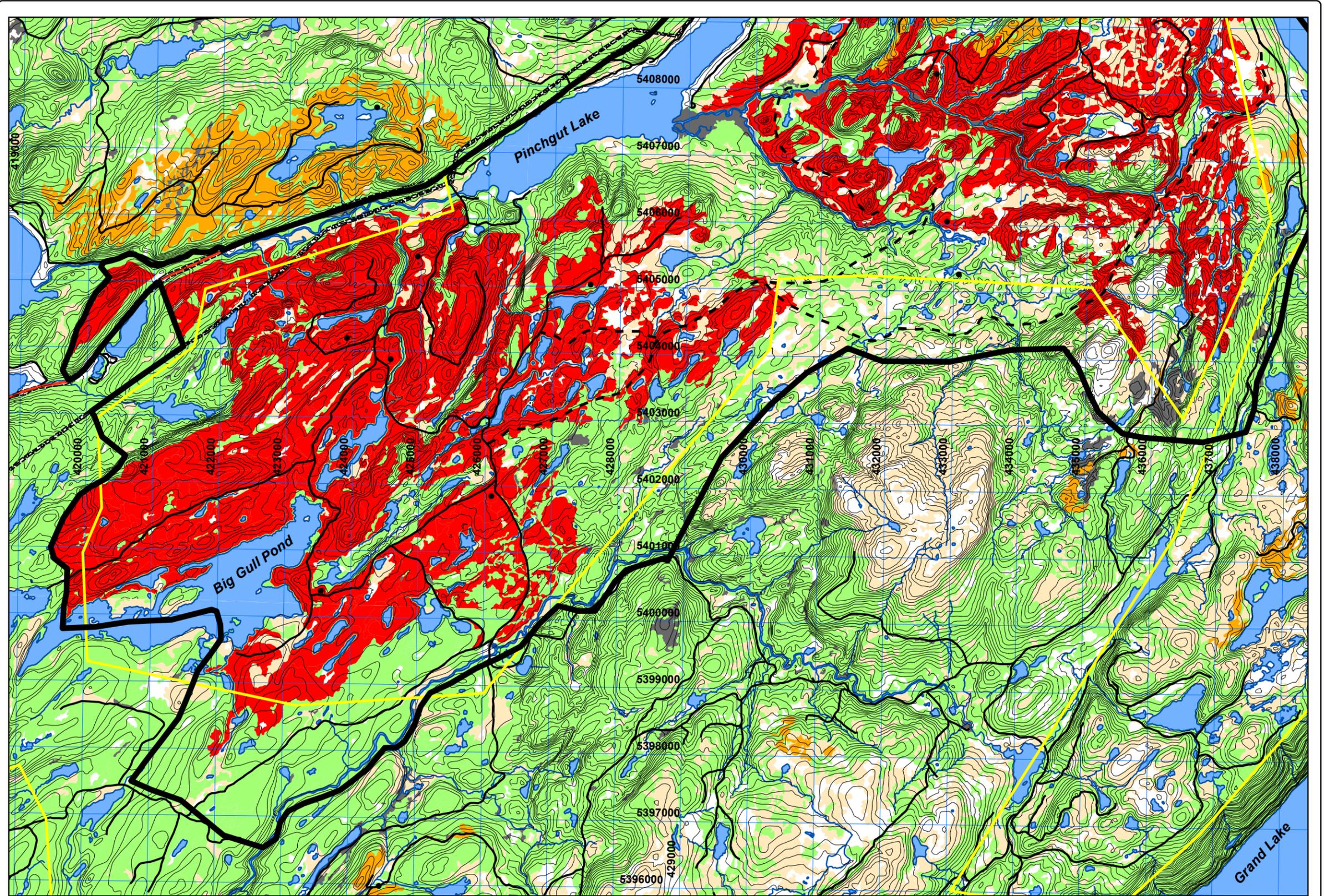
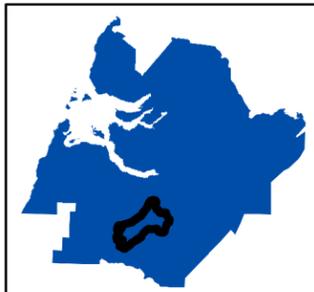
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Stagg Hill Map 2  
( K-15-64 )  
Scale 1:60,000

Forest Inventory Map 070, 071  
NTS Map 12A13, 12B16

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

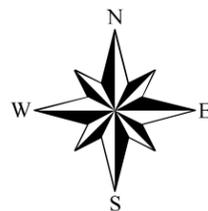
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

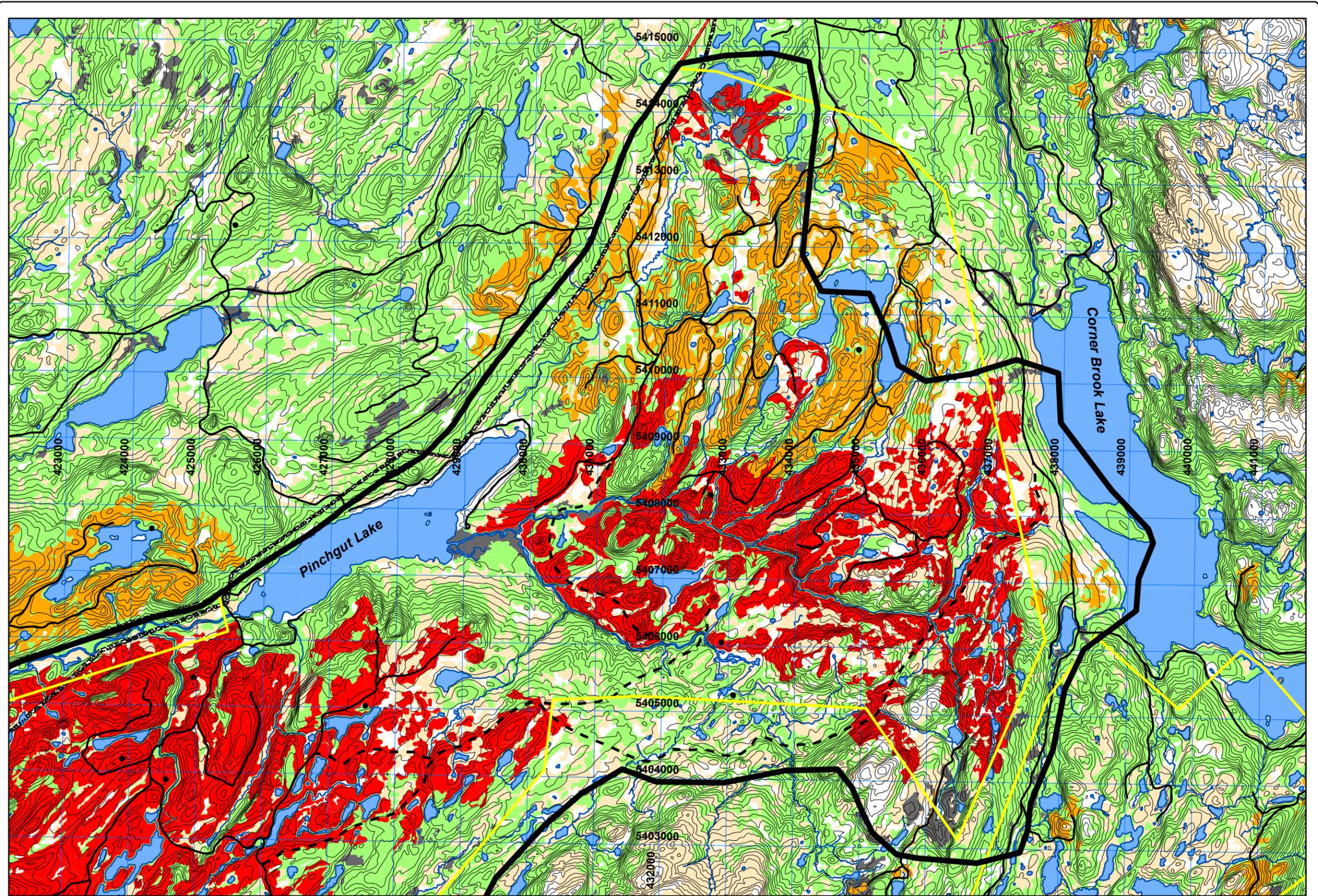
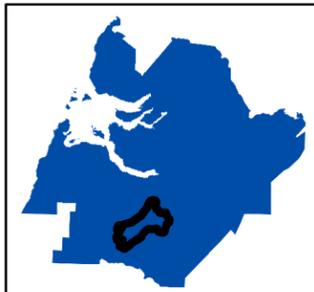
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Steady Brook Lake **Inventory Map #:** 071  
**Harvest Area #:** K-15-65 **NTS Map #:** 12A13

**Forest Inventory**

**Gross**

Volume: 104,125 m3  
Area: 919 ha

**Net**

Volume: 85,382 m3  
Area: 753 ha

**Working Group**

bF: 85 %  
bS: 15 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

This operating area is partially contained inside the Protected Water Supply for the town of Steady Brook. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM plan visit our website @ <http://www.cbppl.com/>.



**Forest Management District 15  
Five Year Plan ( 2014 - 2018 )**

**Steady Brook Lake  
( K-15-65 )  
Scale 1:45,000**

**Forest Inventory Map 071  
NTS Map 12A13**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

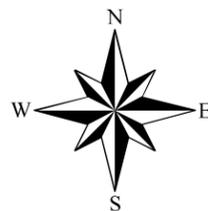
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

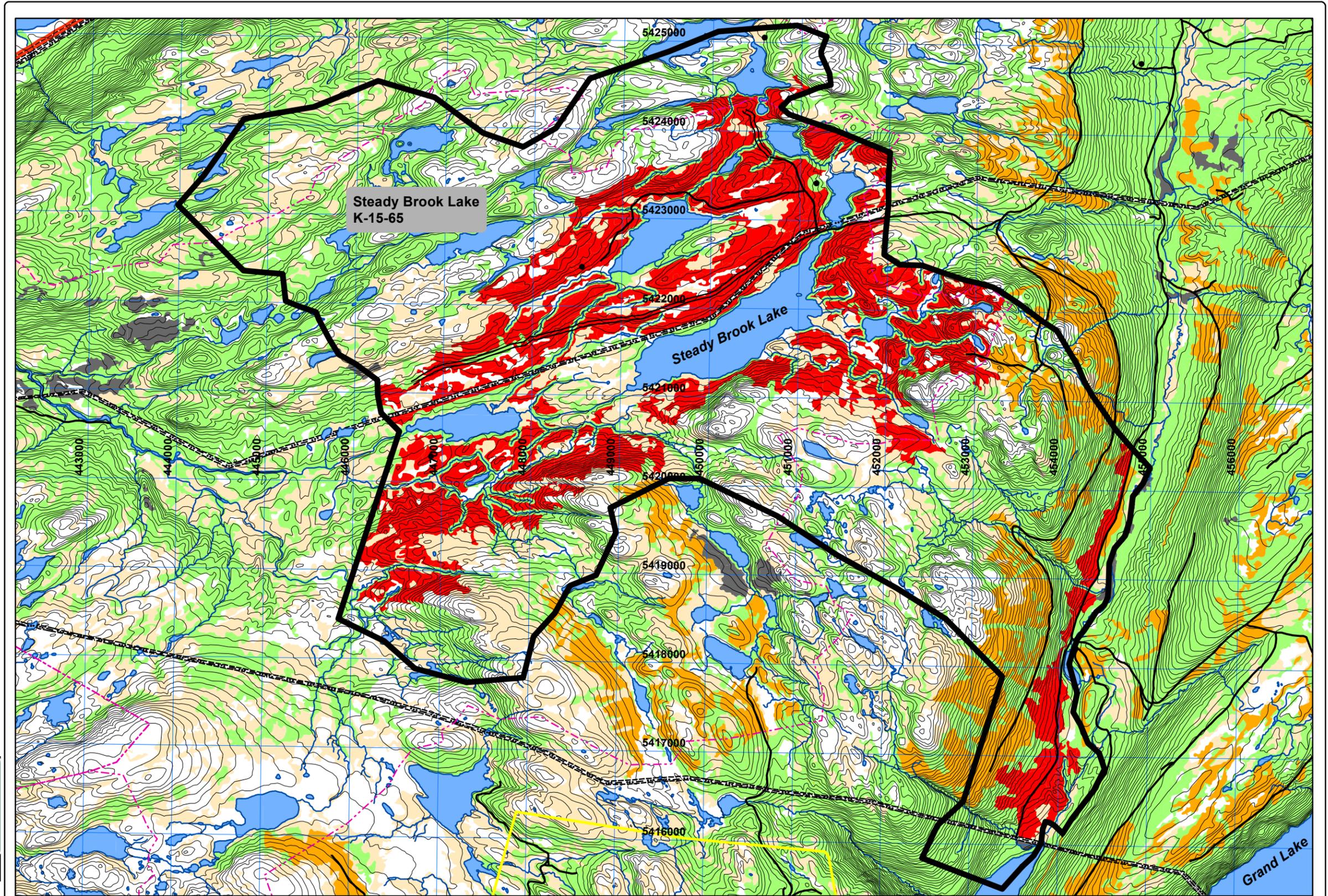
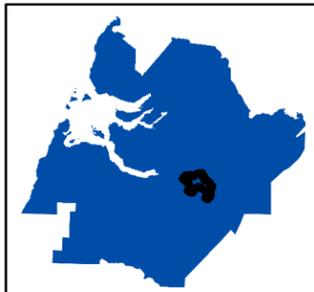
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>15</u>	<b>Plan Period:</b>	<u>Jan 1, 2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Glide Lake</u>	<b>Inventory Map #:</b>	<u>060</u>
<b>Harvest Area #:</b>	<u>K-15-66</u>	<b>NTS Map #:</b>	<u>12H03</u>

<b>Forest Inventory</b>		
<b>Gross</b>	<b>Net</b>	<b>Working Group</b>
Volume: <u>177,821</u> m3	Volume: <u>145,813</u> m3	bF: <u>60</u> %
Area: <u>2,136</u> ha	Area: <u>1,751</u> ha	bS: <u>40</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	<u>Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.</u>

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation with the Wildlife Division regarding Caribou populations and habitat, has resulted in mitigative measures being adopted in this Five Year Plan. These measures ensure adequate habitat is maintained in Caribou Sensitive Areas. A portion of this operating block lies within a Primary and Secondary Core Caribou area. Proposed harvests will follow the Forest Management Guidelines for Woodland Caribou as developed by the Department of Environment and Conservation, Wildlife Division.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

This operating area is partially contained inside the Protected Water Supply for the town of Deer Lake. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Glide Lake Overview Map ( K-15-66 ) Scale 1:100,000

### Forest Inventory Map 060 NTS Map 12H3

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

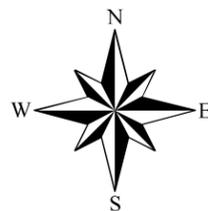
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

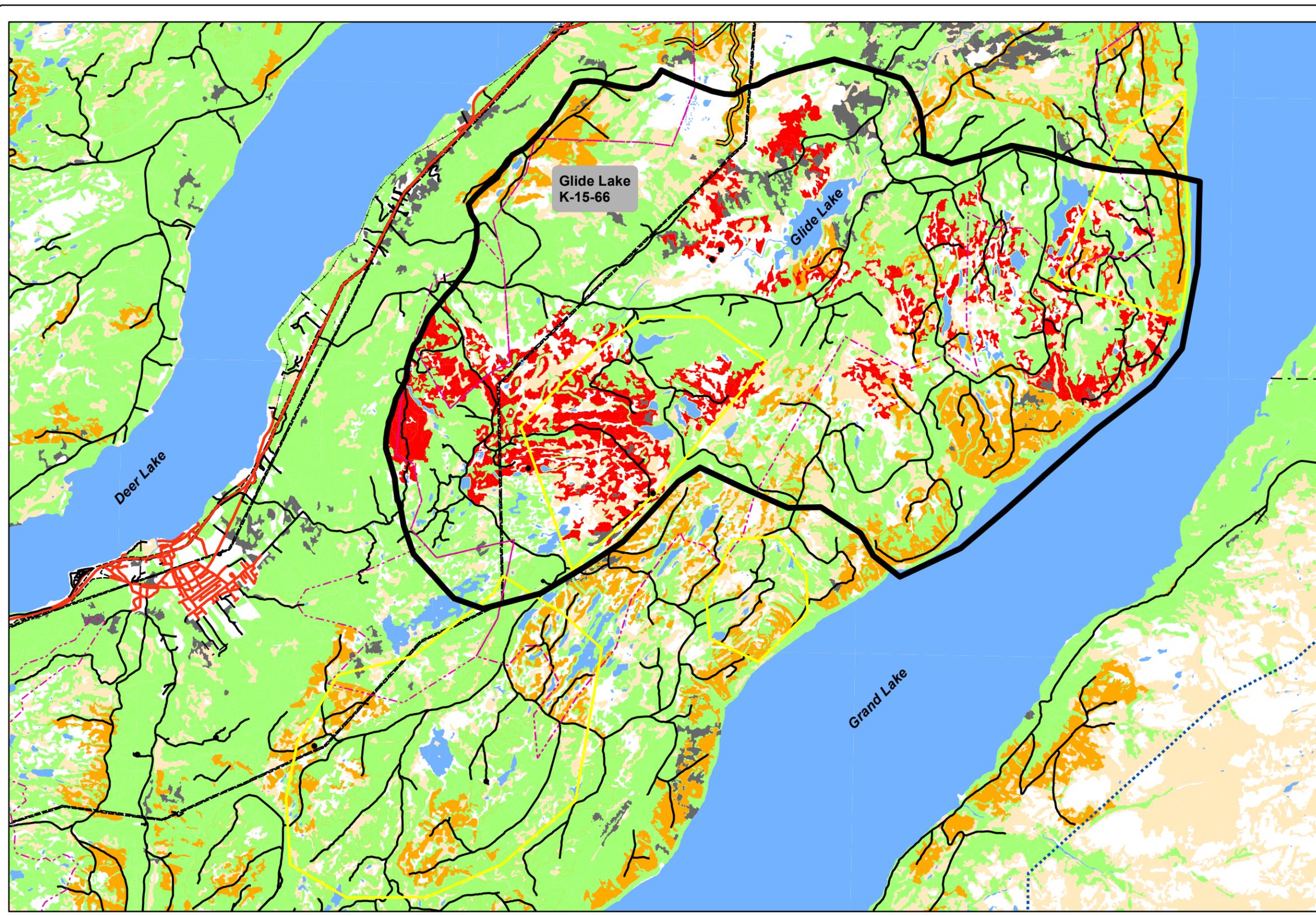
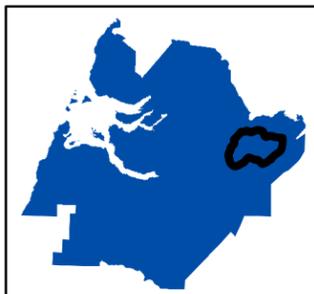
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15



Glide Lake  
K-15-66

Glide Lake

Deer Lake

Grand Lake



# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Glide Lake Map 1  
( K-15-66)  
Scale 1:50,000

Forest Inventory Map 060  
NTS Map 12H3

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

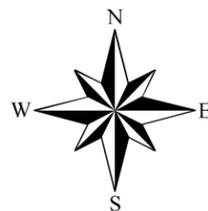
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

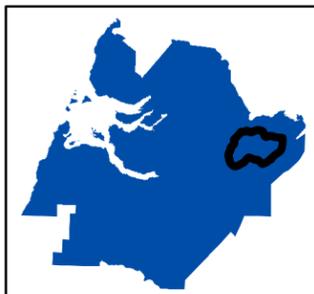
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

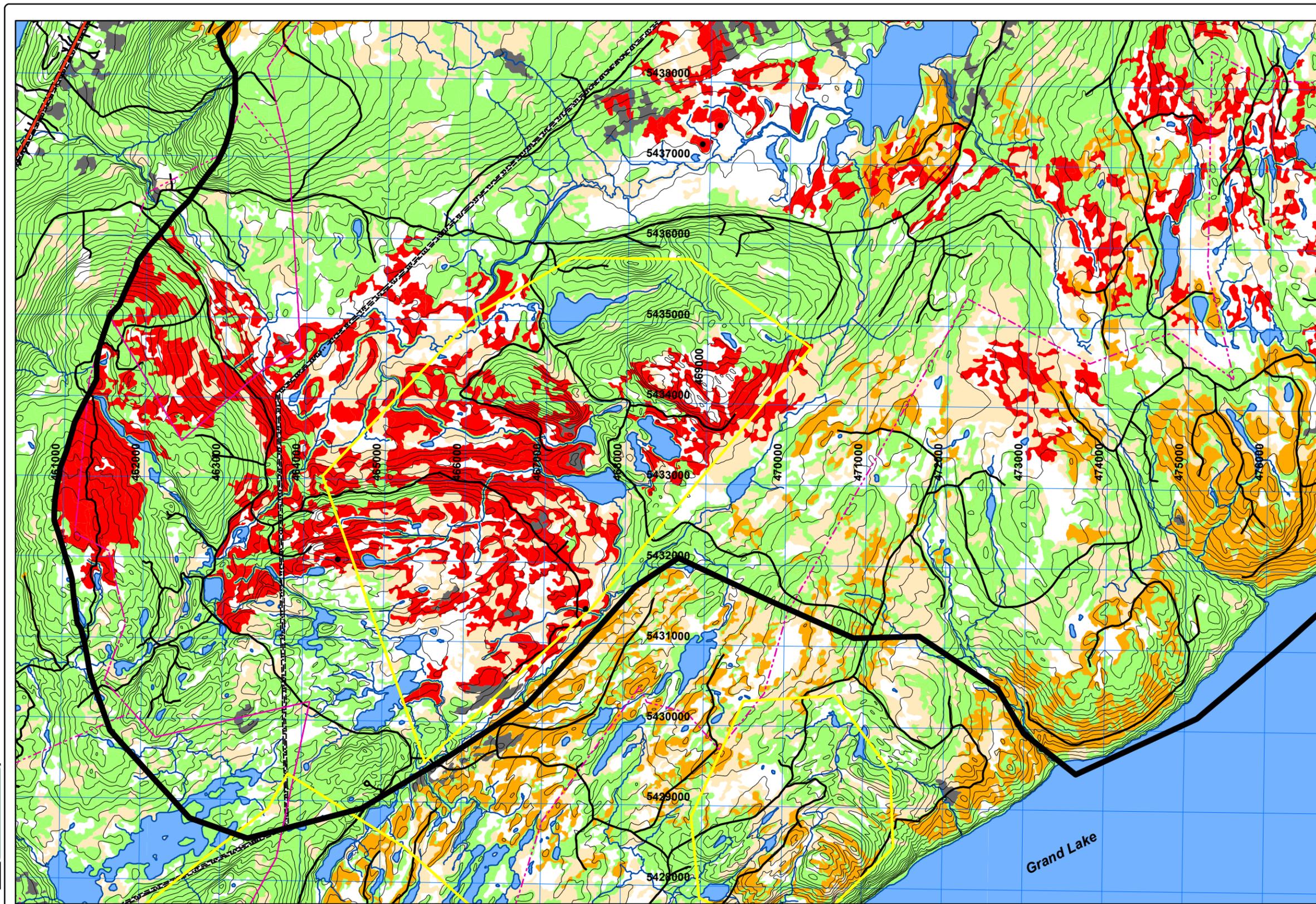
- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15



The mark of  
responsible forestry





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Glide Lake Map 2 ( K-15-66 ) Scale 1:50,000

### Forest Inventory Map 060 NTS Map 12H3

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

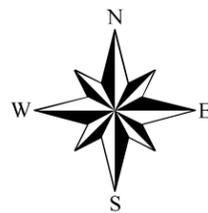
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

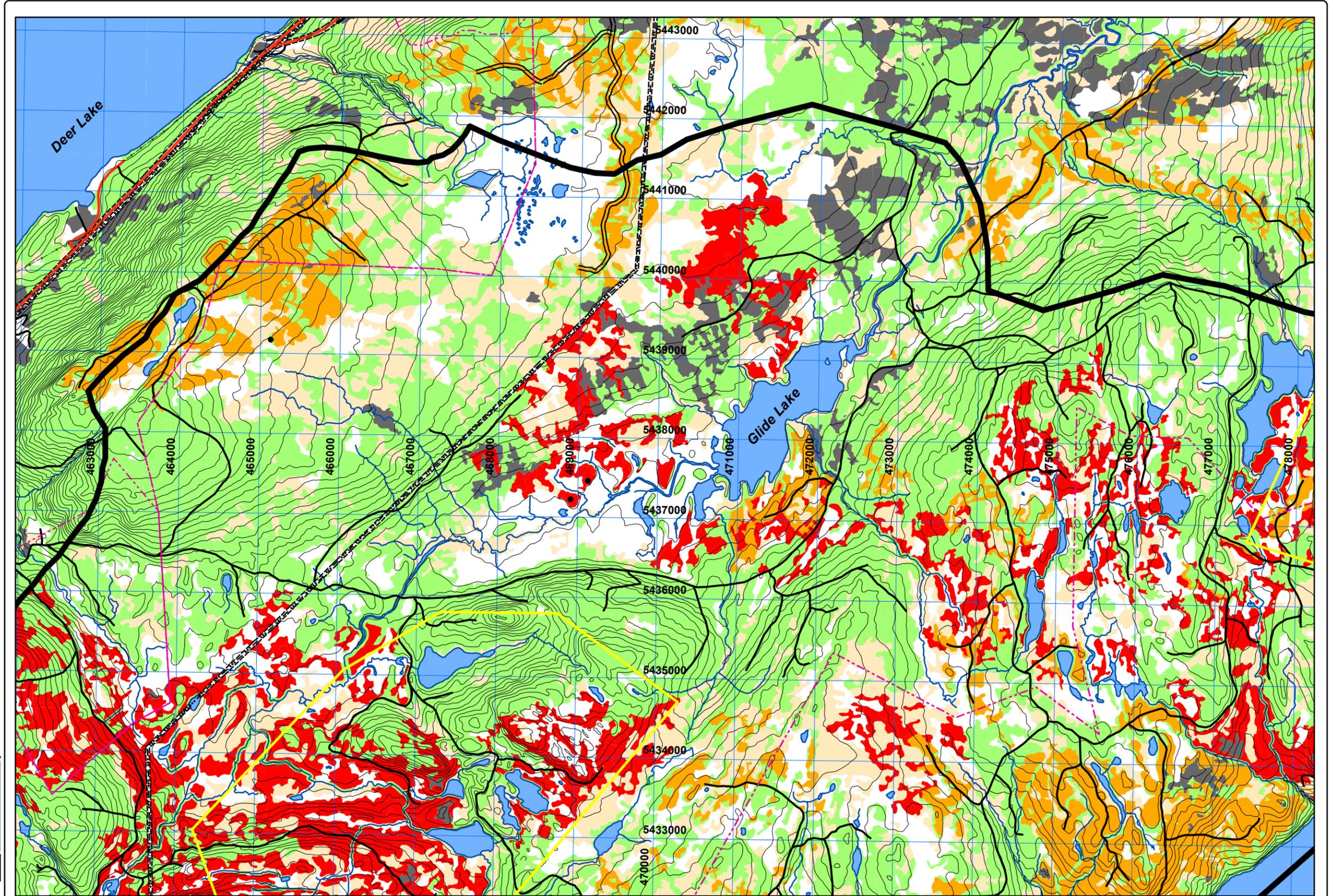
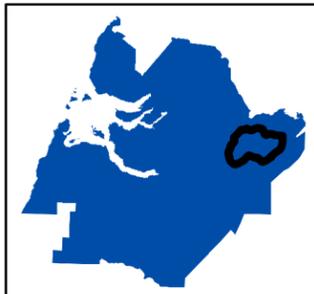
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Glide Lake Map 3 ( K-15-66) Scale 1:50,000

### Forest Inventory Map 060 NTS Map 12H3

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- Railway Provincial Park
- Trails

##### Linear Features

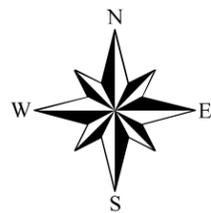
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

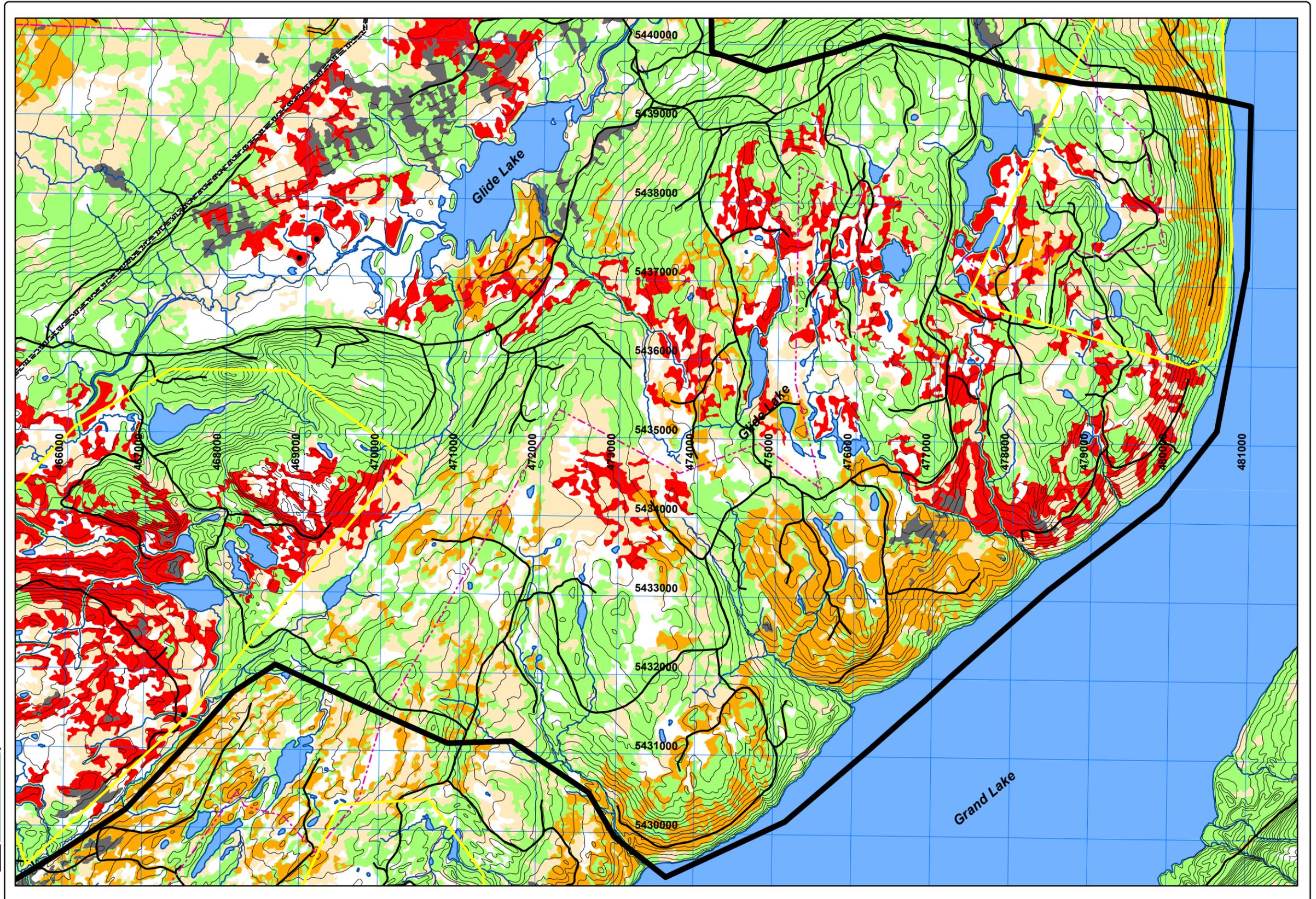
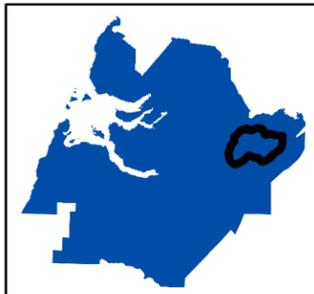
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED**  
**FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>15</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Hughes Lake</u>	<b>Inventory Map #:</b>	<u>059</u>
<b>Harvest Area #:</b>	<u>K-15-67</u>	<b>NTS Map #:</b>	<u>12H04</u>

**Forest Inventory**

**Gross**

Volume: 65,826 m3  
Area: 574 ha

**Net**

Volume: 53,977 m3  
Area: 470 ha

**Working Group**

bF: 90 %  
bS: 10 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Hughes Lake ( K-15-67 ) Scale 1:45,000

### Forest Inventory Map 059 NTS Map 12H04

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

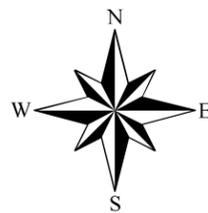
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

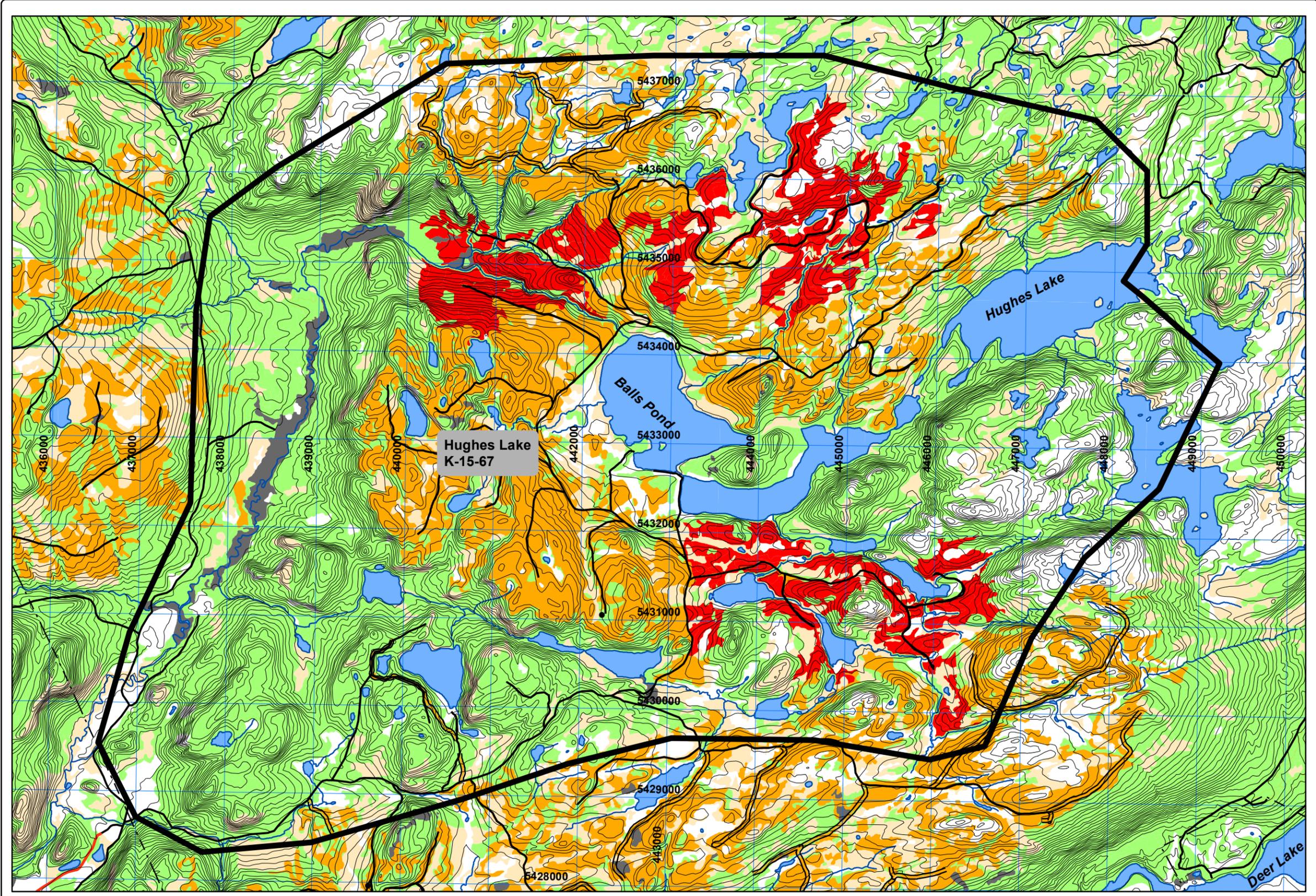
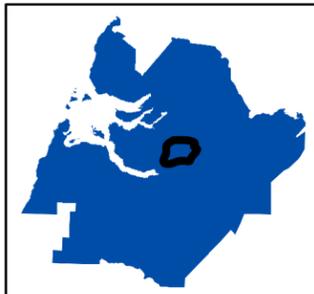
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



<b>FMD:</b>	<u>15</u>	<b>Plan Period:</b>	<u>Jan 1,2014 - Dec 31, 2018</u>
<b>Operating Area:</b>	<u>Goose Arm</u>	<b>Inventory Map #:</b>	<u>049, 059</u>
<b>Harvest Area #:</b>	<u>K-15-68</u>	<b>NTS Map #:</b>	<u>12H04, 12H05</u>

<b>Forest Inventory</b>		
<b>Gross</b>	<b>Net</b>	<b>Working Group</b>
Volume: <u>700,062</u> m3	Volume: <u>574,050</u> m3	bF: <u>90</u> %
Area: <u>7,093</u> ha	Area: <u>5,816</u> ha	bS: <u>10</u> %

<b>Operational Considerations:</b>	
Harvest System:	<u>Mechanical, Conventional</u>
Terrain Conditions:	<u>Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.</u>

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

Consultation with the Wildlife Division regarding Caribou populations and habitat, has resulted in mitigative measures being adopted in this Five Year Plan. These measures ensure adequate habitat is maintained in Caribou Sensitive Areas. A portion of this operating block lies within a Primary and Secondary Core Caribou area. Proposed harvests will follow the Forest Management Guidelines for Woodland Caribou as developed by the Department of Environment and Conservation, Wildlife Division.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Goose Arm Overview Map ( K-15-68 )

Scale 1:160,000

Forest Inventory Map 049, 059  
NTS Map 12H4, 12H5

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road

- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

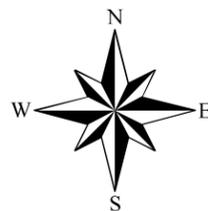
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

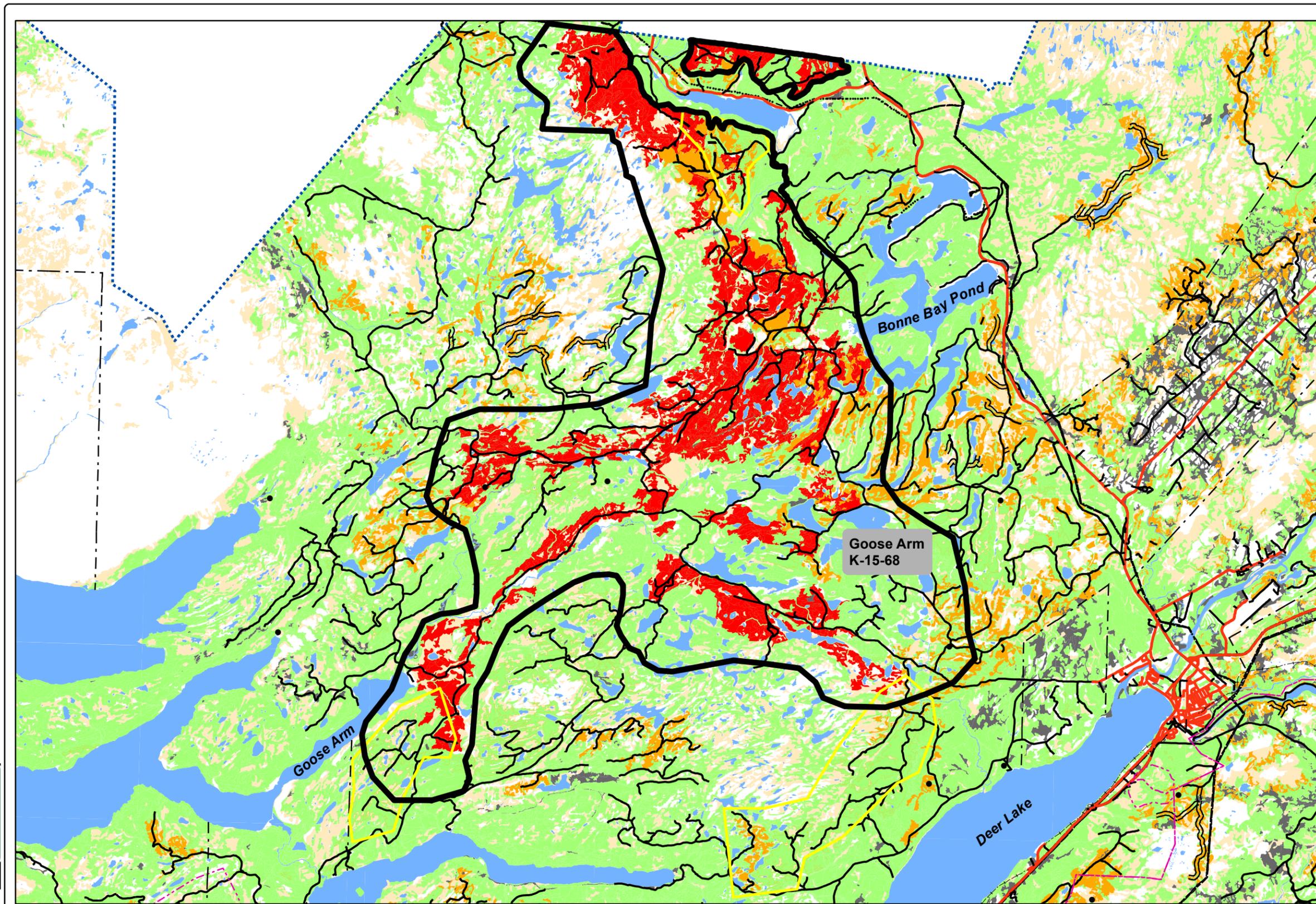
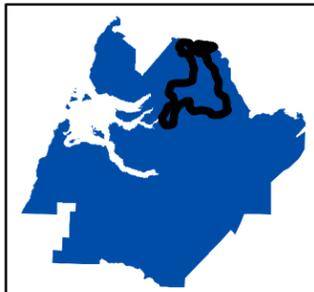
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Goose Arm Map 1  
( K-15-68)  
Scale 1:55,000

Forest Inventory Map 049, 059  
NTS Map 12H4, 12H5

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

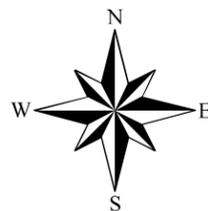
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

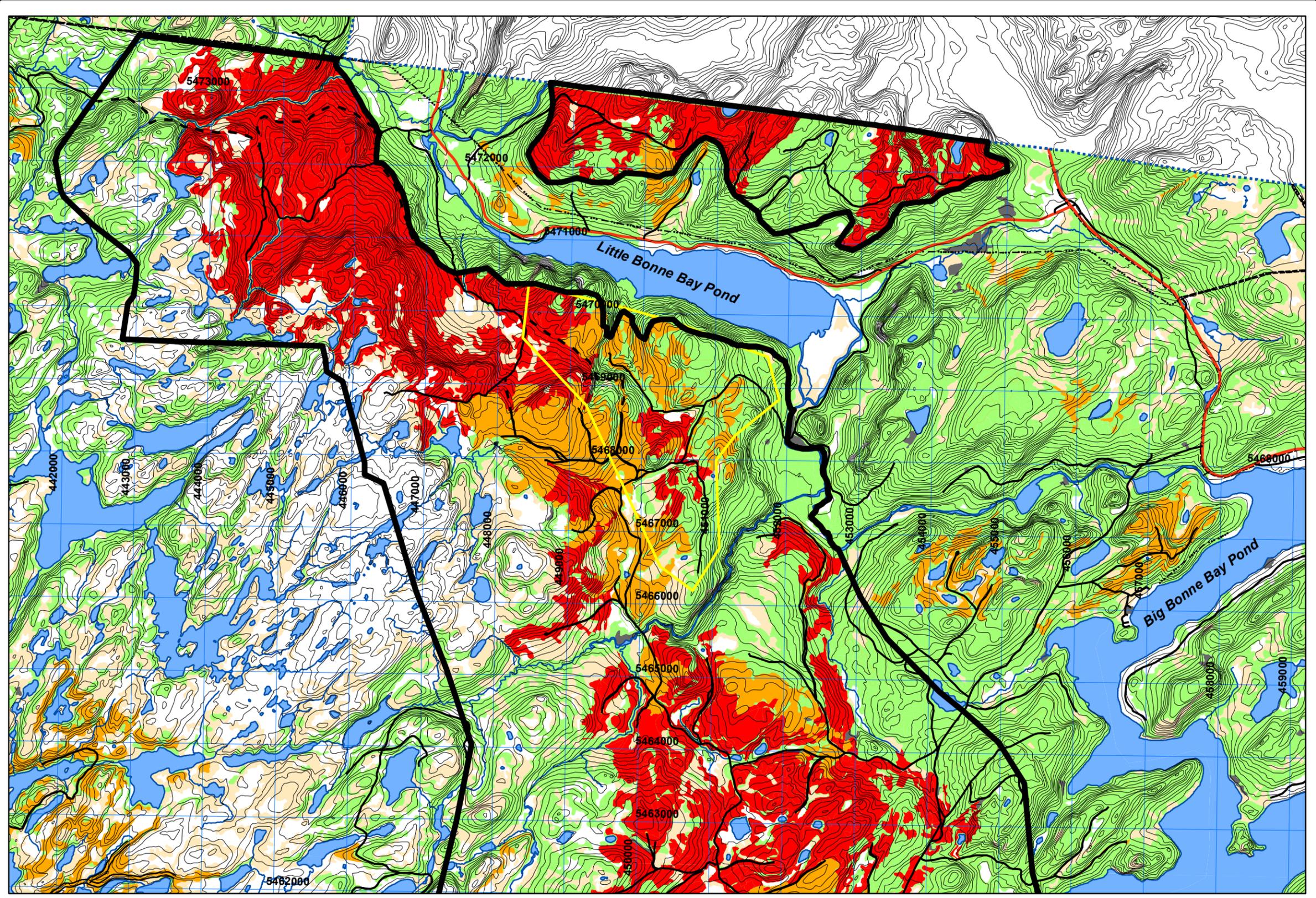
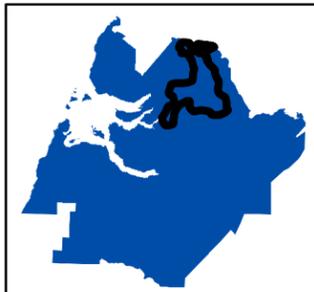
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

Goose Arm Map 2  
( K-15-68)  
Scale 1:55,000

Forest Inventory Map 049, 059  
NTS Map 12H4, 12H5

### Legend

#### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

#### Administration Boundaries

- Management Boundary
- Ownership Boundary

#### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

#### Linear Features

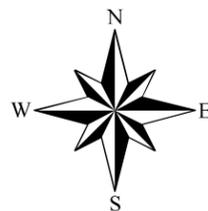
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

#### Land Features

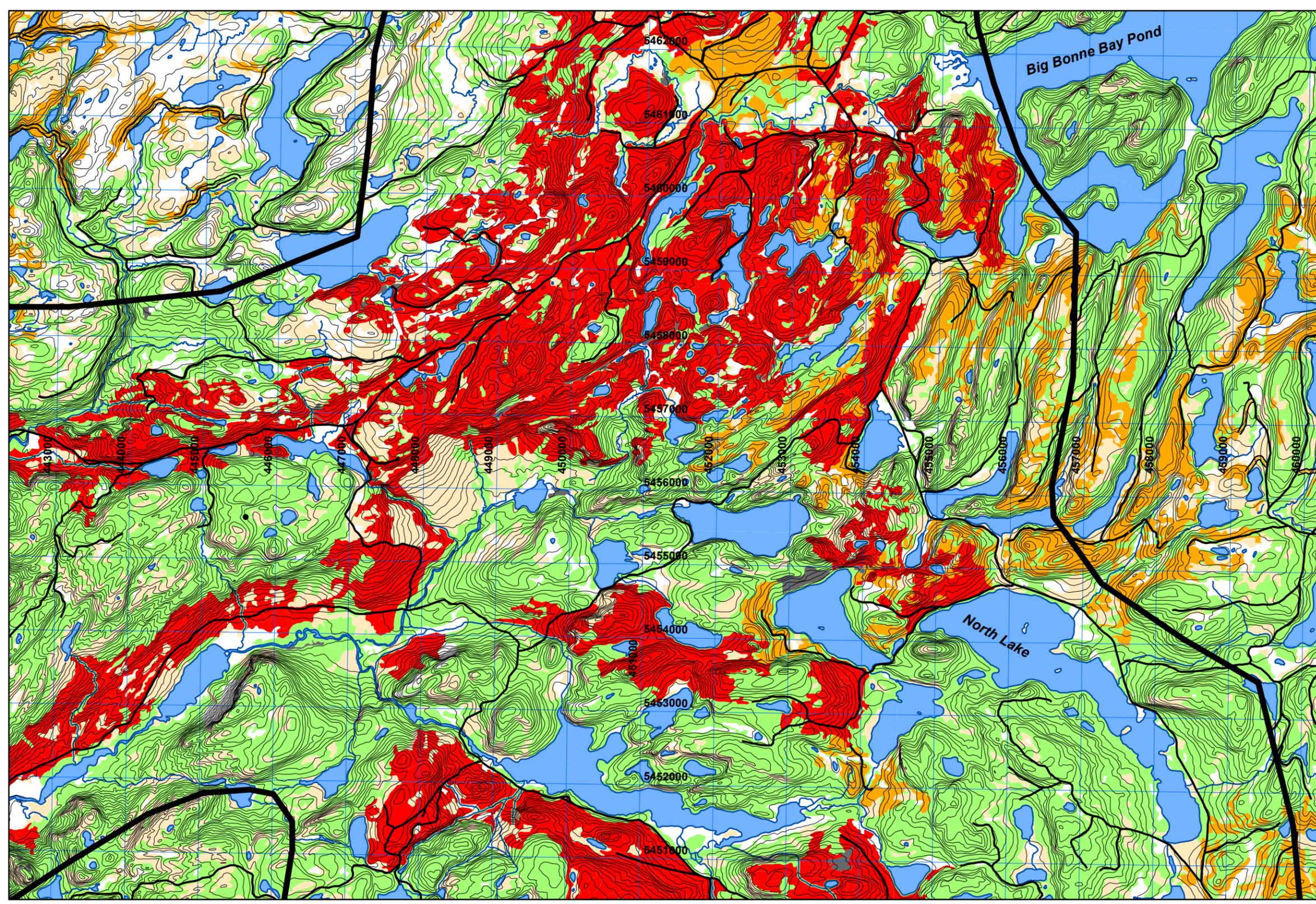
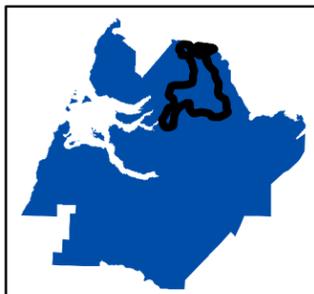
- Forested Land
- Cutover
- Other disturbance
- Scrub

#### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**Forest Management District 15  
Five Year Plan ( 2014 - 2018 )**

**Goose Arm Map 3  
( K-15-68 )  
Scale 1:55,000**

**Forest Inventory Map 049, 059  
NTS Map 12H4, 12H5**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

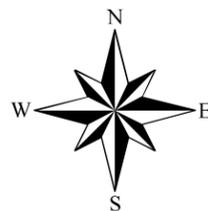
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

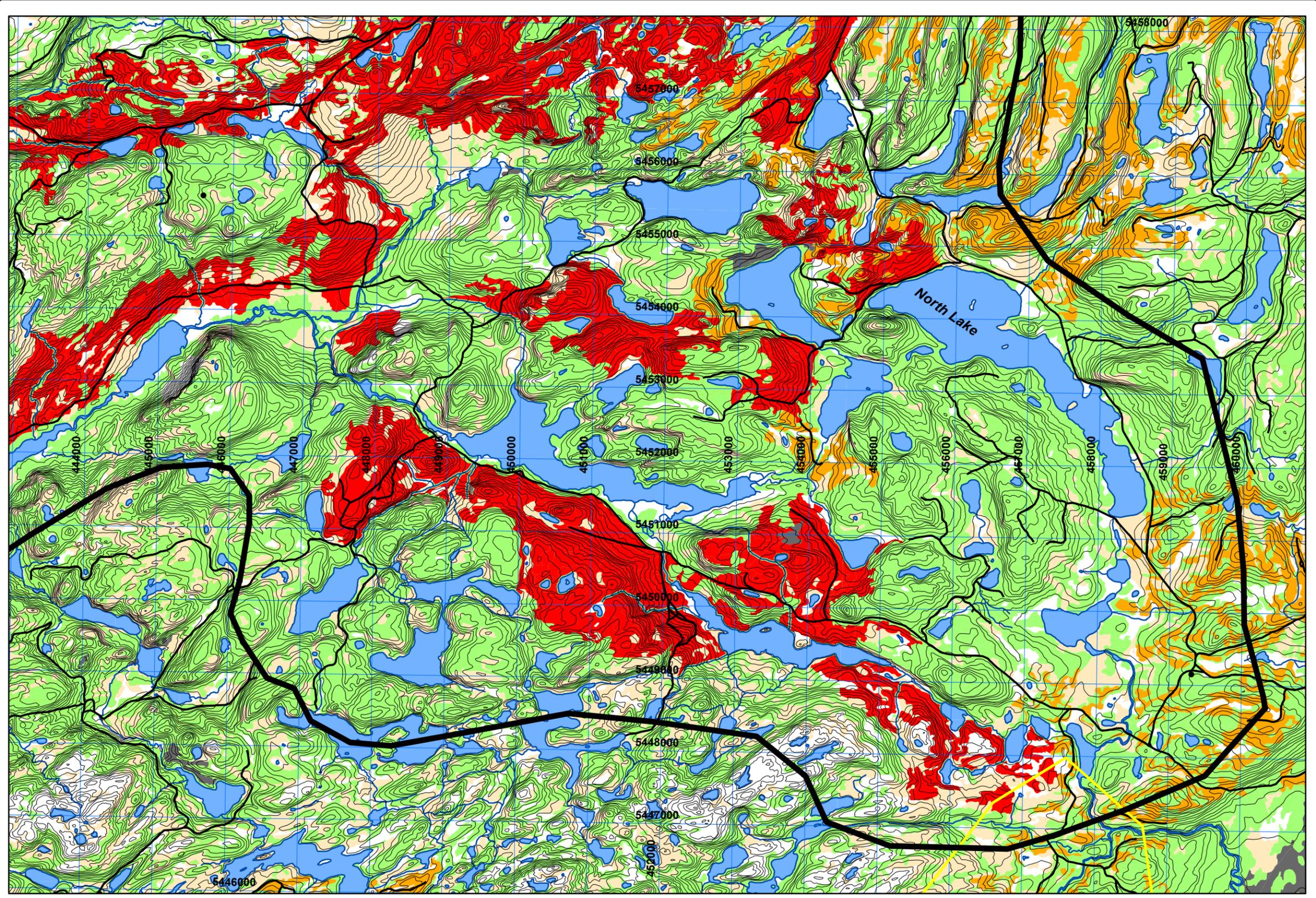
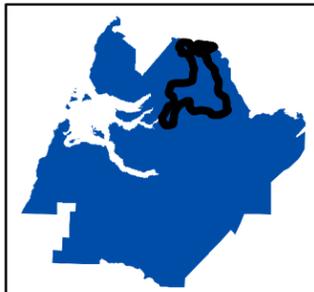
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**Forest Management District 15  
Five Year Plan ( 2014 - 2018 )**

**Goose Arm Map 4  
( K-15-68)  
Scale 1:55,000**

**Forest Inventory Map 049, 059  
NTS Map 12H4, 12H5**

**Legend**

**Five Year Plan Features**

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

**Administration Boundaries**

- Management Boundary
- Ownership Boundary

**Road Features**

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

**Linear Features**

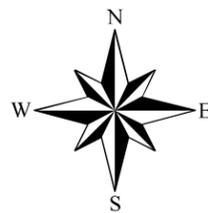
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

**Land Features**

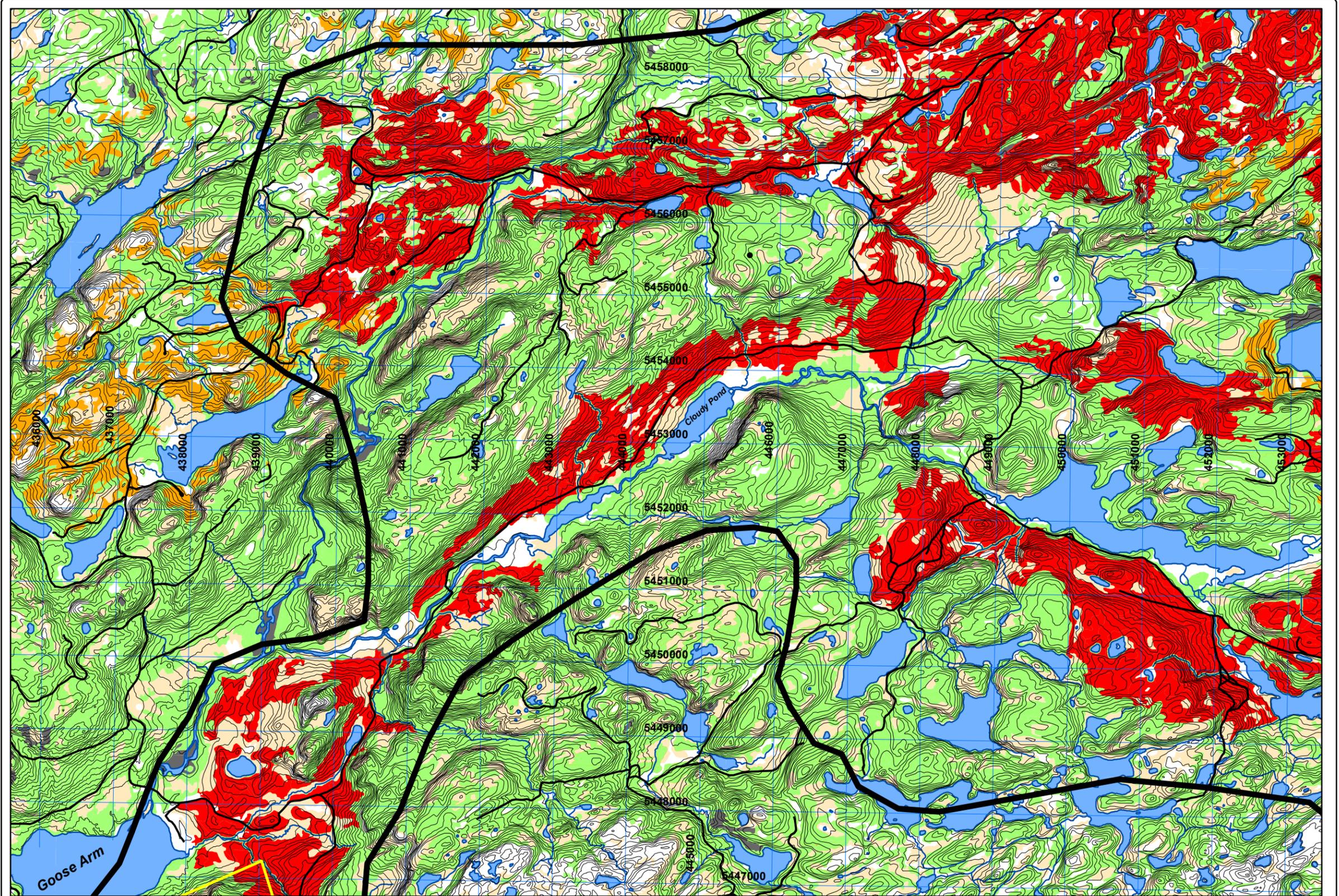
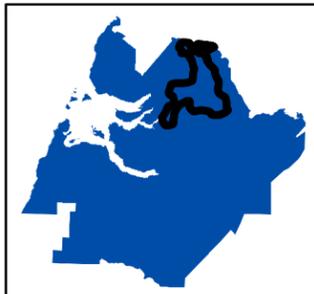
- Forested Land
- Cutover
- Other disturbance
- Scrub

**Water Features**

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Goose Arm Map 5 ( K-15-68 ) Scale 1:55,000

### Forest Inventory Map 049, 059 NTS Map 12H4, 12H5

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area
- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

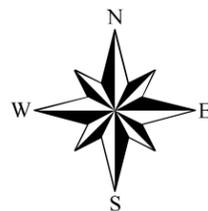
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

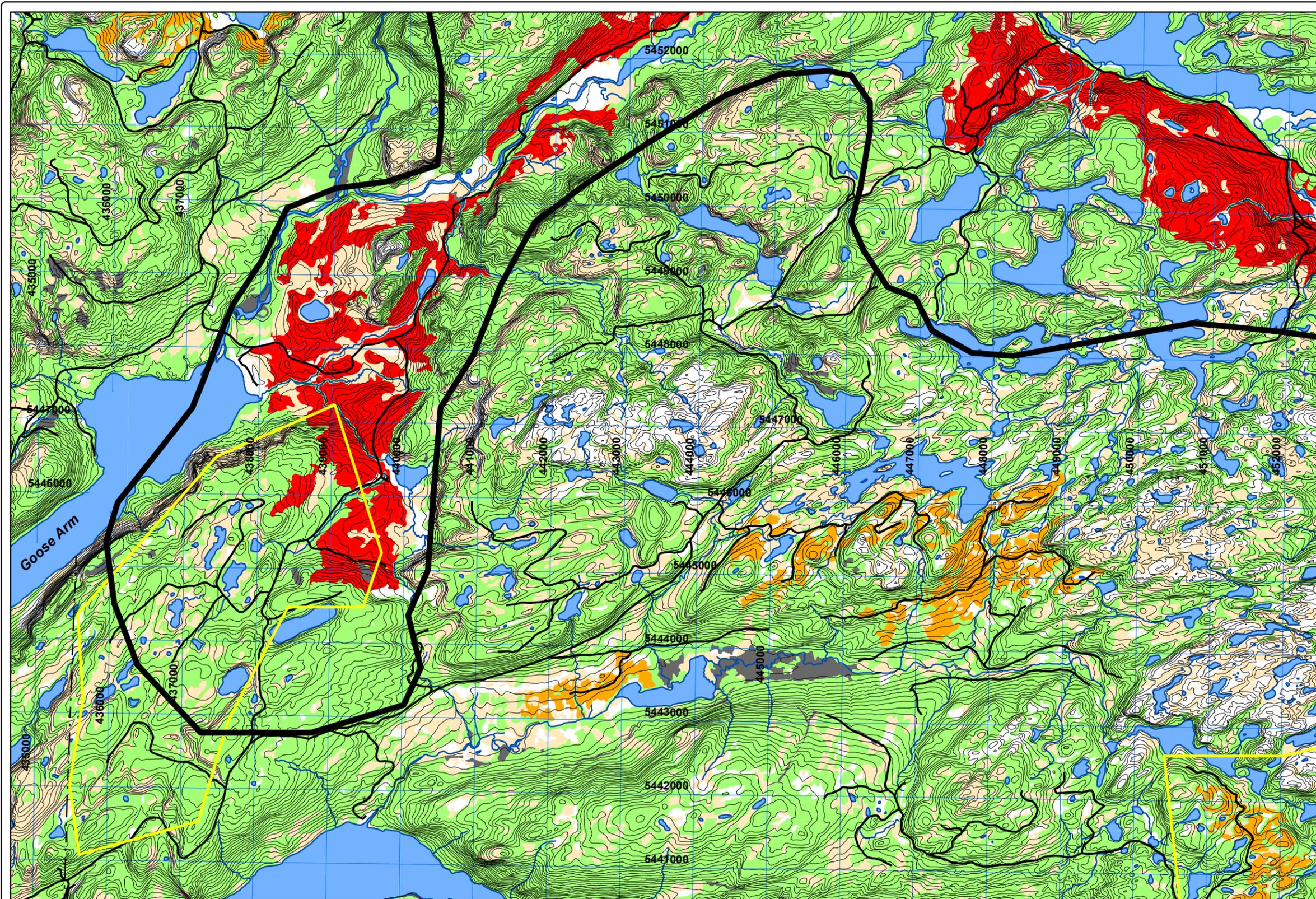
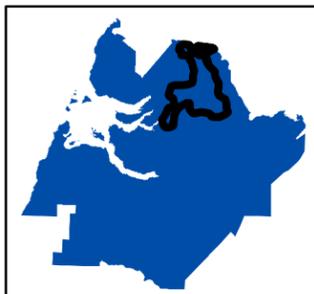
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** 12 Mile Dam **Inventory Map #:** 071  
**Harvest Area #:** K-15-69 **NTS Map #:** 12A13

**Forest Inventory**

**Gross**

Volume: 32,690 m3  
Area: 288 ha

**Net**

Volume: 26,805 m3  
Area: 236 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

A landscape design project during the last Five Year Plan produced a series of no harvest zones along the TCH between Georges Lake and Corner Brook. These no harvest zones (with a few minor adjustments) will be extended to the new Five Year Plan for 2014 - 2018.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

This operating area is contained within the Protected Water Supply for the City of Corner Brook. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

Corner Brook Pulp and Paper Woodlands developed a Sustainable Forest Management Plan as part of our registration to the ISO 14001, CSA Z809 and FSC National Boreal standards. For further information on the SFM plan visit our website @ <http://www.cbpl.com/>.



# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## 12 Mile Dam ( K-15-69 ) Scale 1:35,000

### Forest Inventory Map 071 NTS Map 12A13

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- Railway Provincial Park
- Trails

##### Linear Features

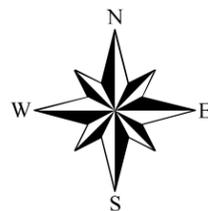
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

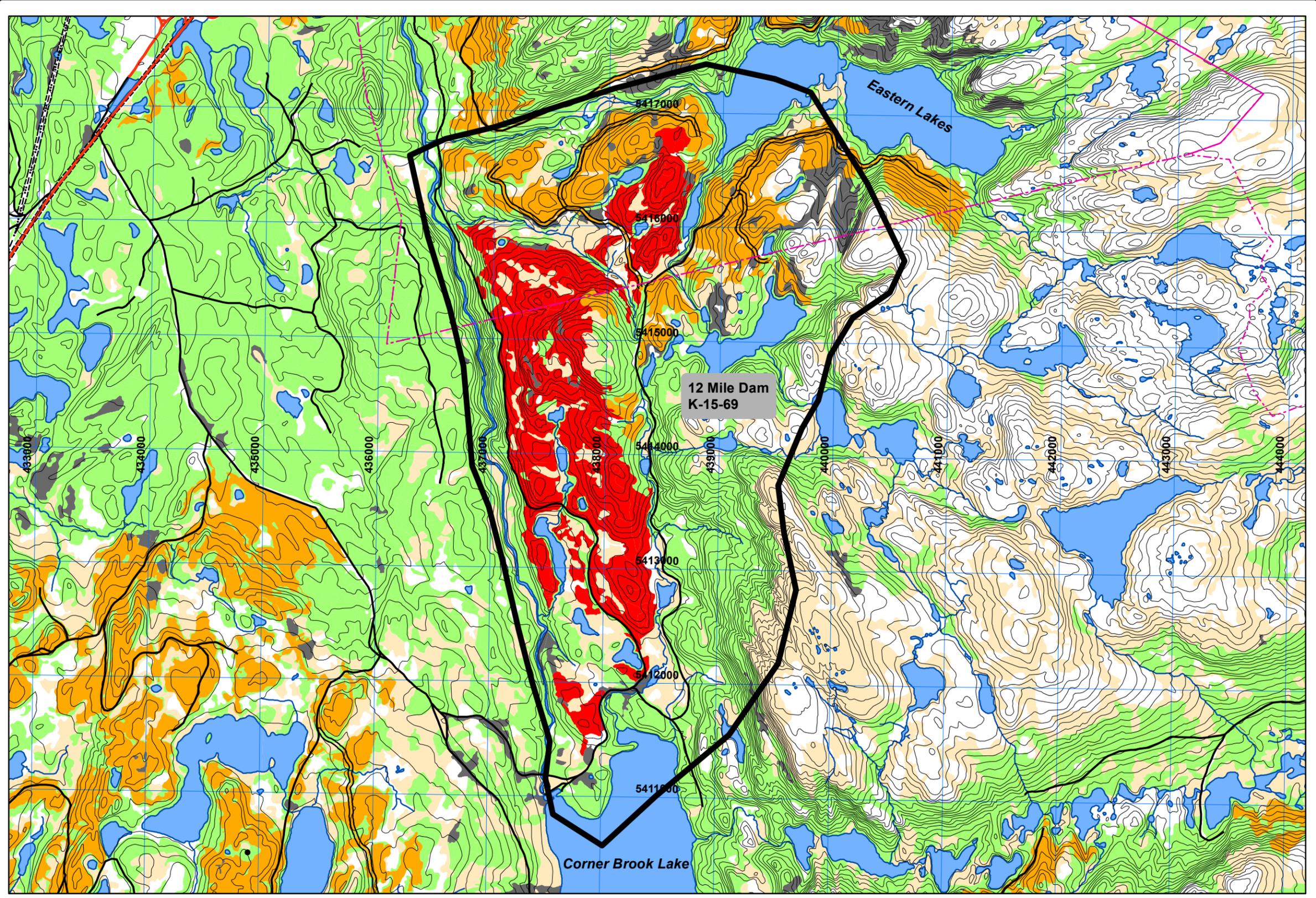
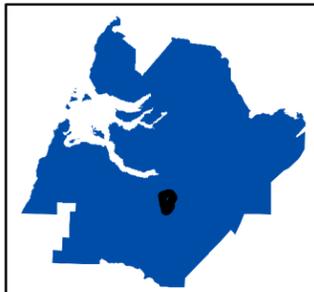
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Serpentine North **Inventory Map #:** 070  
**Harvest Area #:** K-15-70 **NTS Map #:** 12B16

**Forest Inventory**

**Gross**

Volume: 72,228 m3  
Area: 726 ha

**Net**

Volume: 59,226 m3  
Area: 595 ha

**Working Group**

bF: 95 %  
bS: 5 %

**Operational Considerations:**

Harvest System: Mechanical, Conventional

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

Consultation with the Department of Environment and Conservation - Wildlife Division and Parks and Natural Areas, has resulted in the design of Pine Marten Deferred Harvest Zones. These Zones are removed from the harvest schedule for the life of this Five Year Plan and will allow animal migration throughout the District. These deferred harvest zones will be re-evaluated during the next Five Year Plan consultations.

A landscape design project during the last Five Year Plan produced a series of no harvest zones along the TCH between Georges Lake and Corner Brook. These no harvest zones (with a few minor adjustments) will be extended to the new Five Year Plan for 2014 - 2018.

Consultation was held with all Outfitters in Fmd 15. Harvest and road plans were presented to each Outfitter for review. Responses from individual Outfitter's were dealt with and alterations (if required) were made to the Plan.

This operating area is partially within the Protected Water Supply for the Town of Benois Cove. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

Forest Inventory volumes within Operating Areas contain mature stands of timber set aside for Pine Marten, Caribou, viewscape issues, Outfitter or cabin concerns.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Serpentine North ( K-15-70 ) Scale 1:45,000

### Forest Inventory Map 070 NTS Map 12B16

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

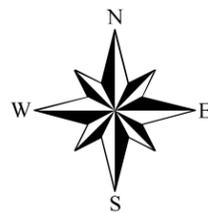
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

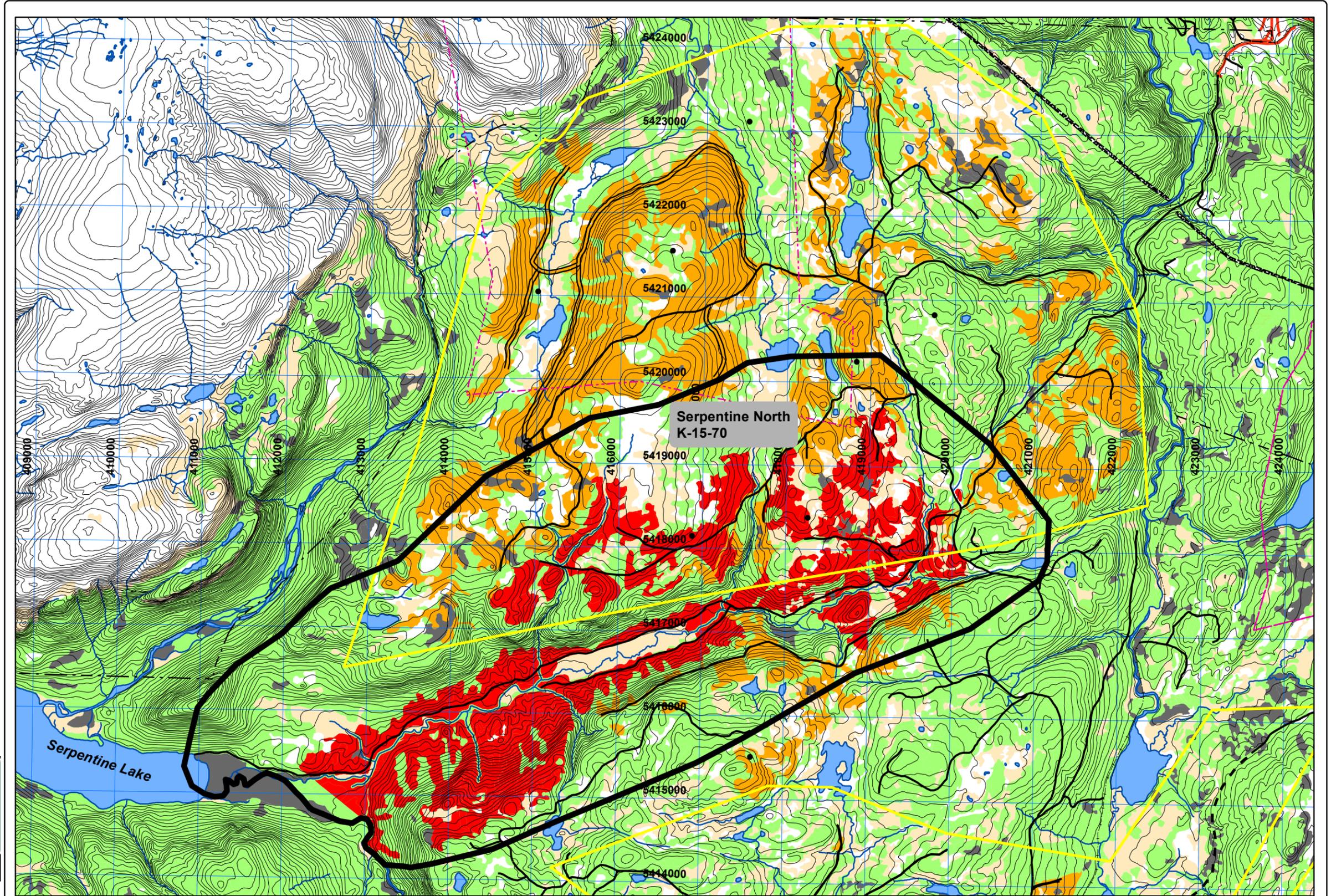
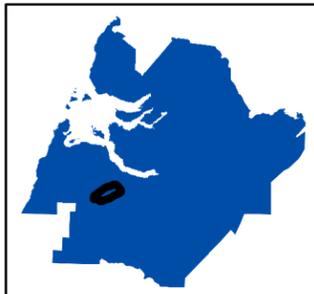
- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15





**CORNER BROOK PULP & PAPER LIMITED  
FIVE YEAR OPERATING PLAN**



**FMD:** 15 **Plan Period:** Jan 1,2014 - Dec 31, 2018  
**Operating Area:** Corner Brook Lake **Inventory Map #:** 071  
**Harvest Area #:** K-15 **NTS Map #:** 12A13

**Forest Inventory**

**Gross**

Volume: 0 m3  
Area: 0 ha

**Net**

Volume: 0 m3  
Area: 0 ha

**Working Group**

bF: 0 %  
bS: 0 %

**Operational Considerations:**

Harvest System: Silviculture Treatment Area

Terrain Conditions: Hilly terrain with steep slopes, shallow to deep topsoil over mineral soil. The merchantable forest is broken up by bog, scrub and areas of Hardwood.

**Other Considerations and Mitigations:**

This operating area is partially contained inside the Protected Water Supply for the City of Corner Brook. Forestry activities will conform with the Environmental Protection Guidelines related to operations within Protected Water Supply Areas.

This Operating Area is for silviculture activities.

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# Forest Management District 15 Five Year Plan ( 2014 - 2018 )

## Corner Brook Lake Silviculture Scale 1:60,000

### Forest Inventory Map 071 NTS Map 12A13

#### Legend

##### Five Year Plan Features

- Five Year Plan Boundary
- Proposed Silviculture Area
- Proposed Harvest Area

- Proposed Primary Road
- Permanent Sample Points

##### Administration Boundaries

- Management Boundary
- Ownership Boundary

##### Road Features

- Paved Roads
- Resource Roads
- Winter Roads
- T'Railway Provincial Park
- Trails

##### Linear Features

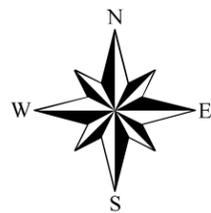
- UTM Grid
- Contours
- Transmission Lines
- Protected Public Water Supply Area
- Wildlife Corridor

##### Land Features

- Forested Land
- Cutover
- Other disturbance
- Scrub

##### Water Features

- Waterbodies
- Brooks



Inset Map Showing  
Five Year Plan Within District 15

