
Nass South Sustainable Resource Management Plan Socio-Economic Assessment

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Acknowledgements and Disclaimer

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In addition to the work by Pierce Lefebvre Consulting this SEA report draws heavily on two sources of data: firstly GIS data, maps and assistance supplied by Suzanne Gunn of High Road GIS Services and Ryan Holmes of ILMB, Smithers; and secondly timber supply analyses conducted by Robert Schuetz of Industrial Forestry Service Ltd.

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In developing the socio-economic estimates prepared for this study, the consultants have made several forecasts and assumptions utilizing information gathered under the time and resource constraints imposed on this study. Socio-economic assessments are subject to a high degree of uncertainty, particularly as forecasts extend over periods of several decades. The forecasts and assumptions utilized herein are thought to be reasonable and suitable for the purposes of this analysis, but should not be relied upon for other purposes.

The analysis was carried out in general accordance with the methods and requirements presented in the Ministry of Agriculture and Lands document titled *Guidelines for Socio-Economic and Environmental Assessment (SEEA)*.

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Nass South SRMP - Socio-Economic Assessment

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ACRONYMS

AAC	Allowable Annual Cut
ARIS	Assessment Report Indexing System (mineral exploration expenditures)
BC	British Columbia
BCTS	BC Timber Sales
DFO	Department of Fisheries and Oceans, Canada
EAO	Environmental Assessment Office (of BC)
ERA	Environmental Risk Assessment
FEN	Forest Ecosystem Network (areas)
FPC	Forest Practices Code (superseded by FRPA)
FRPA	Forest and Range Practices Act (FRPA)
GIS	Geographic Information System
ILMB	Integrated Land Management Bureau
IWMS	Identified Wildlife Management Strategy (IWMS)
KSRD	Kitimat-Stikine Regional District
LRMP	Land and Resource Management Plan
MAL (BC MAL)	Ministry of Agriculture and Lands (also, BC MAL)
MEMPR (BC MEMPR)	Ministry of Energy, Mines and Petroleum Resources (previously MEM)
MOE (BC MOE)	Ministry of Environment
MOF (BC MOF)	Ministry of Forests, now MOFR
MOFR (BC MOFR)	Ministry of Forests and Range (also, BC MOFR)
MSRM (BC MSRM)	Ministry of Sustainable Resource Management (now part of BC MAL)
MU or MUs	Management Unit (s) (relate to wildlife)
NEV	Net Economic Value
OGMA or OGMAs	Old Growth Management Area (s)
PA or PAs	Protected Area (s)
PY or PYs	Person Year (s) (of employment)
SEA	Socio-Economic Assessment
SEEA	Socio-Economic and Environmental Assessment
SNDS	Skeena Native Development Society
SRMP	Sustainable Resource Management Plan
TFL or TFLs	Tree Farm Licence (s)
THLB	Timber Harvesting Land Base
TSA	Timber Supply Area
TSR	Timber Supply Review
UREP	Use, Recreation, Enjoyment of the Public area
VQO or VQOs	Visual Quality Objective(s)
WHA or WHAs	Wildlife Habitat Area (s)
WLAP	Ministry of Water, Land and Air Protection (now part of BC MOE)
WMU or WMUs	Water Management Unit (s)
WTP or WTPs	Wildlife Tree Patch (es)

Summary

The purpose of the Nass South Sustainable Resource Management Plan (SRMP) is to provide strategic direction for the sustainable management of the Crown land and land-based resources in the plan area, focussing primarily on forestry, ecological and First Nations values. The general objectives of an SRMP are to reduce and resolve land use conflicts, ensure sustainable resource management, and provide economic diversity and security.

The Nass South SRMP focuses on management objectives for sustaining ecological, social and cultural values, while maintaining opportunities for growth in the forest industry. This report assesses the likely socio-economic implications of the SRMP assuming that the management direction outlined in the SRMP will be applied and enforced.

Overview of Nass South SRMP Area

The Nass South SRMP area covers 662,510 hectares of northwest BC, or approximately 0.7% of the total BC landbase. Approximately 542 people reside in the area (2006), including 500 people in Stewart and 42 people in Meziadin Junction and elsewhere in the area.

Approximately 59% of the Nass South SRMP area is in Gitanyow asserted traditional territory (390,905 hectares). The Gitanyow communities that depend on resources from the Nass South SRMP area are located south of the plan area boundaries.

The Nisga'a Nation maintains interests in much of the plan area through provisions of the Nisga'a Final Agreement treaty and land claims settlement. These interests include wildlife harvesting rights in the Nass Wildlife Area, comprising some 74% of the plan area, fishing rights, commercial recreation tenures, guided angling stream licences and several parcels of land held in fee simple for the benefit of the Nisga'a Nation. Nisga'a communities that benefit from resources in the Nass South SRMP area are primarily located downstream along the Nass River, to the south and west of the plan area.

The Skii Km Lax Ha Nation also asserts traditional territory interests in lands in the Nass South SRMP plan area, but the nature and extent of these interests is less understood at this time than those of the Gitanyow and Nisga'a peoples.

The land based resources in the Nass South SRMP area support a variety of socio-economic values including forestry, pine mushroom harvesting, tourism, recreation, fishing, and wildlife related activities, as well as First Nations cultural and heritage values.

Key Elements of Nass South SRMP

The Nass South SRMP recommendation comprises the following main elements:

- **Proposed Hanna-Tintina Protected Area:** 24,262 hectares (3.7% of plan area);
- **Spatial Deployment of Old Growth Management Areas (OGMAs):** a further 5.0% or 33,337 hectares, which will be excluded from timber harvest.
- **A Forest Ecosystem Network (FEN):** hydroriparian zones or areas bordering several

identified water bodies in which industrial timber harvesting would not be permitted. These FEN areas cover an additional 23,500 hectares (not including overlaps with OGMAs or Hanna-Tintina) or 3.5% of the plan area (based on areas defined as “FEN core” areas in the July 2008 GIS data).

- **Other Area Specific Management Polygons:** The Nass South SRMP provides additional area specific management direction focusing on maintaining and restoring pine mushroom habitat, moose winter range, grizzly bear habitat, mountain goat habitat, northern goshawk habitat, fish habitat and sensitive watersheds.
- **General Management Direction:** The SRMP provides management direction to sustain and preserve several other resource values, including cultural heritage values, over the entirety of the crown land base in the plan area.

Summary of Nass South SRMP Impacts

The major contraction in the forest industry experienced in Northwest BC over the past 10 years has seriously impacted economic activity in the plan area, and in ‘primary impact area’ communities. Significant population declines and high unemployment rates have been experienced by most communities in the primary impact area.

The Nass South SRMP should help establish a foundation for future economic growth based on consensual access to plan area resources, but short-term economic benefits flowing from the plan are likely to be limited.

Short-term economic costs in terms of employment, income, government revenues and net economic value are also likely to be very modest, particularly given the low level of current economic activity in the Nass South area.

A key benefit of the plan is to provide greater certainty to First Nations, particularly the Gitanyow people, that traditional resource values are being managed sustainably, and that traditional uses of the land and its resources can be maintained into the future. Although there is no specific management direction focused on recreation, the plan also provides some confidence that tourism and recreation assets in the plan area will be preserved to support future First Nations business ventures centred around tourism and recreation activities.

Estimates of pine mushroom harvesting activity in the Nass South SRMP area are highly uncertain, but it appears that pine mushroom harvesting is likely more economically and socially significant than in any other region of BC. Formalizing management for pine mushroom habitat provides recognition of the local significance of this resource, and confidence that pine mushroom harvesting can sustain and grow if market circumstances permit.

Ecological impacts of the Nass South SRMP are generally expected to be positive for wildlife, fisheries, and ecosystem sustainability, relative to the base case management regime. These are discussed in a separate environmental assessment report.¹

The following paragraphs summarize the Nass South SRMP impacts on key industrial sectors.

¹ Fiera Ecological Consulting, *Environmental Risk Assessment for the Nass South Sustainable Resource Management Plan Area*, prepared for BC Ministry of Agriculture and Lands, June 2007.

Forestry

- The Nass South SRMP area is entirely contained within the Lower Nass portion of the Nass Timber Supply Area (TSA).
- The AAC in the Nass TSA is 665,000 m³ for the Lower Nass (of which 557,400 m³ is supported by the Nass South SRMP area) and 200,000 m³ for the Upper Nass. The 2004-2006 average timber harvest for the Nass TSA was 164,000 m³ (25% of current AAC for the Lower Nass where all of the TSA's recent timber harvesting has occurred), and the trend continued through 2007 with a total timber harvest of 166,500 m³.
- Timber supply modelling undertaken to assess the impacts of the Nass South SRMP indicates that the plan area's contribution to Nass TSA short term timber supply would be 462,735 m³ per year, a decline of 94,657 m³ (17%) relative to a base case projection with no SRMP. The decline of 94,657 m³ represents 14.2% of the AAC for the Lower Nass TSA.
- A 14.2% drop (23,360 m³) in the current harvest levels of 164,000 m³ could put at risk 15 PYs of direct employment in BC, of which 11 PYs would likely be based in the Nass South SRMP primary impact area.
- Timber supply modelling indicates that in Decade 7, the Long Term Sustainable Harvest (LTSH) in the plan area under Nass South SRMP management would be 49,250 m³ less than the Base Case level of 290,224 m³, a 17% decline in LTSH for the plan area, and a 12.1% decline when applied to the LTSH for the entire Lower Nass of 407,000 m³.

Mining

- The Nass South SRMP does not establish management objectives specific to mining other than affirming support for the 2-zone system; namely protected areas where mining is not permitted (4.5% including existing and proposed PAs) and other areas that are accessible to mining (95.5% of the landbase).
- The proposed Hanna-Tintina PA has no recorded metallic mineral occurrences and no exploration expenditures, but some recently acquired mineral tenures overlap the area by 1,417 hectares. Development of those mineral tenures would not be permitted under the Nass South SRMP.

Pine Mushroom Harvesting

- In a good year, harvesting pine mushrooms may produce a harvest of 40,000 kg from the plan area, and involve approximately 50 or 60 PYs of direct employment.
- Under the Nass South SRMP, 12.6% of pine mushroom harvesting management areas would be in areas where timber harvesting is not permitted. Additional management objectives aimed at maintaining forest age in the most productive range for pine mushrooms (80 to 200 years), in identified pine mushroom habitat areas, should provide a good foundation for sustaining the economically and socially significant pine mushroom harvest. In the long term, pine mushroom productivity may decline in those areas where timber harvesting is not permitted, as the forests in those areas become greater than 200 years old.

Backcountry Tourism and Recreation

- The Nass South SRMP will benefit backcountry tourism and recreation through no-timber harvest areas, preserving wildlife habitat and winter range particularly for grizzly bear, moose, and mountain goat, preserving the function and integrity of riparian areas, and protecting archaeological and cultural heritage values.
- The Nass South SRMP will also provide greater land use certainty and operational certainty for tourism service providers, notably heli-skiing and other guided tenured commercial recreation activities that are permitted uses in areas protected from timber harvest (i.e. Hanna–Tintina PA).

Other Industrial Sectors

- Provincially significant commercial fisheries will benefit from increased protection of fish habitat, water quality and water quantity.
- The proposed Hanna-Tintina protected area includes provision of a specific corridor through the protected area to accommodate a proposed 335 km high voltage electricity transmission line between Terrace and Bob Quinn Lake north of the Nass South SRMP area.
- Trap lines should benefit from the SRMP through better management of ecological and wildlife values.

Net Economic Value

From a net economic value (NEV) perspective, the costs related to changes in forest industry activity should be compared with the benefits associated with maintaining or expanding fisheries, recreation, backcountry tourism, botanical forest products, and trapping values.

- The negative forestry NEV impacts have been estimated at \$88,531 per annum (\$46,720 in lost stumpage and the balance in lost labour and capital rents) in the short term. The value of lost opportunity in the longer term if timber markets improve, could be considerably higher. The NEV accounting is incomplete, however, as it does not include consideration of a likely decline in negative externalities arising from industrial forestry.
- Industry sectors that are growing and will benefit from the Nass South SRMP may offset part of this decline in economic rent. These include guided heli-skiing, guided hunting, wildlife viewing, and perhaps pine mushroom harvesting if markets improve.
- Over the next few years, with expected forest industry operations remaining very limited, the overall total NEV impacts of the Nass South SRMP are likely to be negligible. In the longer term, if markets for timber improve, there are likely to be more significant negative NEV impacts related to plan imposed constraints on industrial forestry, which are not fully counterbalanced by positive NEV impacts on other sectors.

Communities

- The plan provides for sustained pine mushroom habitat and preserves some tourism and recreation values, which should support economic diversity in the region. The Nass South SRMP will have some negative impacts on the forest sector, but the short term impacts are not

expected to be significant enough to materially affect the primary impact area communities.

- The Nass South SRMP will have a greater impact on the forest sector should future timber markets allow timber harvest levels closer to the AAC, but should this happen, it is likely that the costs associated with the SRMP would go unnoticed in most communities as they experience the benefits of an industry resurgence.

Gitanyow

- The Nass South SRMP will likely benefit the Gitanyow house territories and communities. Key elements that will be particularly beneficial include the proposed Hanna-Tintina PA, protection of old growth values through OGMAs, greater protection of riparian areas, identification and protection of moose winter range, mountain goat winter range and high/very high value grizzly habitat, identification and protection of pine mushroom harvesting areas, and increased protection provided to cultural heritage sites.
- Each of the 6 Gitanyow house territories that overlap the Nass South SRMP area are expected to derive benefits from the plan. A subjective assessment of Nass South SRMP socio-economic impacts on each Gitanyow house territory is presented at the end of this Executive Summary.

Nisga'a

- The Nass South SRMP will benefit the Nisga'a communities by providing greater protection of fish habitat, wildlife habitat and ecological values throughout much of the Nass Wildlife Area, established in the Nisga'a Final Agreement in respect of wildlife, and the 'Nass Area' in respect of fisheries.
- The Nass South SRMP refers to, and appears to support provisions of the Nisga'a Final Agreement.

Skii Km Lax Ha

- Although little is known about the specific values and interests of the Skii Km Lax Ha in the plan area, the general emphasis of the plan on maintaining and preserving traditional cultural values, fisheries and wildlife should not compromise Skii Km Lax Ha interests, and may be beneficial to those interests.

Graphic Representation of Socio-Economic Impact Assessment

The following three tables present the key elements of the plan and their potential impacts on each sector, interest group or value.

- Summary Table 1: summarizes a subjective assessment of the SRMP's impacts compared with the base case in terms of the nature and size of the net benefits and costs of the different components of the SRMP (listed down the left hand side) on the different industry sectors and social values (listed across the top).
- Summary Table 2: presents a similar subjective assessment of the SRMP impacts but for each Gitanyow territory.

- Summary Table 3: presents a more quantitative perspective on expected impacts at a similar level of detail.

Summary Table 1: Subjective Socio-Economic Assessment on Industry Sectors and Communities

Nass South SRMP Subjective Socio-Economic Impact Assessment		Forestry	Mining	Energy	Guiding/Trapping	Botanicals	Tourism	Recreation	Communities	First Nations
General Plan Process	Community Capacity Building								b	b
	Resource Documentation and Data Bases	b				b				b
	Local Consensus on Land and Resource Use	B							b	B
Water (2.1)	Riparian Reserve Zones - Full Retention	c					b	b		b
	Riparian Management Zones - Partial Retention	c					b	b		b
	Timber Harvesting Not Recommended in Floodplains or Alluvial Fans						b	b		b
	Restore Damaged Watersheds	c					b	b		b
Biodiversity (2.2)	Patch size as per Biodiversity Guidebook									
	WTPs as per FRPA									
	Preserve Red Listed Plants Species	c								b/c
	Conserve Blue Listed Plant Species	c								b/c
	Maintain Tree Species Diversity; Accent Cedar, Maintain Deciduous					b				b
	Deploy OGMA, Maintain Seral Stages to Reflect Natural Disturbance	C				b	b/c		b/c	b
Pine Mushrooms (2.3)	Maintain Designated Forest Ecosystem Network Hydroriparian Areas	C				b	b	b	b	B
	Maintain More than 50% of Productive Areas in Forests 80 - 200 Years old	c				B			b	B
Wildlife (2.4)										
Moose (2.4.1)	Designate winter range as Ungulate Winter Range Under FRPA	c				b		b	b	b
	Maintain, Enhance or Restore High Value Moose Habitat	c				b		b	b	b
	Discourage Permanent Roads in Winter Range					b/c		b/c	b/c	b
Mountain Goat (2.4.2)	Minimize Disturbance in Winter Range	c	c			b		b/c	b/c	b
Grizzly Bear (2.4.3)	Designate WHAs for Grizzly	c				B		b	b	b
	90% of forested area in HV Habitat retained as Functional Thermal and Security	c				b	b/c	b	b	b
	Maintain Foraging Habitat					b		b	b	b
	Minimize Human/Bear Contact					c		c	c	c
	Keep Permanent Roads 150 meters From High Value Habitat	c								
	Short Timber Harvesting Periods followed by long periods of inactivity	c								
Fur Bearers (2.4.4)	Maintain Fisher and Wolverine Denning Sites					b				b
Goshawk (2.4.5)	1% of OGMA Budget to protect nesting/post-fledging area	c								
	Maintain Foraging Habitat around known nesting/post fledging areas									
Fisheries (2.5)	Maintain or Restore Habitat in Fish Bearing Streams, Rivers and Lakes						b	b		b
Cultural Heritage (2.6)	Traditional Use and Archaeological Sites	c	c				b	b		B
	CMTs	c								b
	Cedar									b
Timber (2.7)	No Harvest in Proposed Treaty Settlement Lands	c								b
	Harvest the Profile									
	Minimize Conversion of THLB to Other Uses	b							b/c	
	Consult and Dialogue with First Nations	c								b/c
Area Specific Management (2.8)	Hanna Tintina	C	c			b	b/c	b	b	B
	Water Management Units	c	c					b	b	b

Legend: c = modest costs, C = significant costs, b = modest benefits, B = significant benefits, and b/c = a mix of costs and benefits.

Note on Methodology:

- The consultant assigned subjective, relative, cost and benefit indicators to the impact of SRMP management initiatives on the various sectors, interests and values, based on impressions formed over the course of undertaking the socio-economic impact assessment. Expected impacts are indicated on the chart as Significant Costs (C), Modest Costs (c), Significant Benefits (B), Modest Benefits (b), or a mix of costs and benefits, with neither being particularly dominant (b/c). Where cells in the grid are left blank, no impacts are expected.
- The rows on the chart correspond to management initiative headings in the Nass South SRMP document. The columns in the chart represent the various sectors, interests and values and the cells in each column show the assessed relative impacts of the different management initiatives on the sector, interest or value represented by the column. The columns are independent from one another in the sense that a significant benefit (B) to say the recreation sector is not necessarily of the same magnitude or social significance as a significant benefit (B) to the Botanical Forest Products sector. The chart does not attempt to weigh the relative value or significance of the different sectors or interests (columns).

Summary Table 2: Subjective Socio-Economic Assessment on Gitanyow Territories

Nass South SRMP Subjective Socio-Economic Impact Assessment - Gitanyow People and Traditional House Territories (see Note 1)		Wii Litsxw	Luux Hon	Gamiakyeitxw	Haitisimsxw	Maiiii/Axwindsesxw	Gwaas Hla lam/ Bii Yosxw	Gitanyow People
General Plan Process	Community Capacity Building							b
	Resource Documentation and Data Bases							b
	Local Consensus on Land and Resource Use							B
Water (2.1)	Riparian Reserve Zones - Full Retention							b
	Riparian Management Zones - Partial Retention							b
	Timber Harvesting Not Recommended in Floodplains or Alluvial Fans							b
	Restore Damaged Watersheds							b
Biodiversity (2.2)	Patch size as per Biodiversity Guidebook							
	WTPs as per FRPA							b/c
	Preserve Red Listed Plants Species							b/c
	Conserve Blue Listed Plant Species							b
	Maintain Tree Species Diversity; Accent Cedar, Maintain Deciduous							b
	Deploy OGMA, Maintain Seral Stages to Reflect Natural Disturbance	B	B	B	b	B	B	b
Pine Mushrooms (2.3)	Maintain Designated Forest Ecosystem Network Hydroriparian Areas	B	B	B	b	B	B	B
	Maintain More than 50% of Productive Areas in Forests 80 - 200 Years old	b	B	B	b	B	b	B
Wildlife (2.4)								
Moose (2.4.1)	Designate winter range as Ungulate Winter Range Under FRPA	B	B	B			b	b
	Maintain, Enhance or Restore High Value Moose Habitat							b
	Discourage Permanent Roads in Winter Range							b
Mountain Goat (2.4.2)	Minimize Disturbance in Winter Range							b
Grizzly Bear (2.4.3)	Designate WHAs for Grizzly							b
	90% of forested area in HV Habitat retained as Functional Thermal and Security							b
	Maintain Foraging Habitat							b
	Minimize Human/Bear Contact							c
Fur Bearers (2.4.4)	Keep Permanent Roads 150 meters From High Value Habitat							
	Short Timber Harvesting Periods followed by long periods of inactivity							
Goshawk (2.4.5)	Maintain Fisher and Wolverine Denning Sites							b
Fisheries (2.5)	1% of OGMA Budget to protect nesting/post-fledging area							
	Maintain Foraging Habitat around known nesting/post fledging areas							
Cultural Heritage (2.6)	Maintain or Restore Habitat in Fish Bearing Streams, Rivers and Lakes							b
	Traditional Use and Archaeological Sites	B	b	B	b			B
	CMTs							b
Timber (2.7)	Cedar							b
	No Harvest in Proposed Treaty Settlement Lands	b	b	b	b	b	b	b
	Harvest the Profile							
	Minimize Conversion of THLB to Other Uses							
Area Specific Management	Consult and Dialogue with First Nations							b/c
	Hanna Tintina	B						B
	Water Management Units	b	b	b		b		b

Note 1: For the Gitanyow House Territories assessment, impacts are noted only for those values where GIS data could provide insight on the distribution of the values across the house territories.

Summary Table 3: Nass South SRMP Summary of Sector Impacts

Nass South Socio-Economic Activities by Sector	Direct Person Years (PYs) of Employment			Annual Public Sector Rent (Stumpage Net of Costs - Est. \$2 per m3)	Net Impacts from Plan
	Local (mainly Stewart)	Primary Impact Area (Incl. Local)	Total BC (Includes local impacts)		
Forestry	20 PYs	76 PYs	108 PYs	\$0.3 million in stumpage and NEV of \$0.6 million	C
	3 direct PYs at risk	11 direct PYs at risk	15 direct PYs at risk	Loss of \$0.05 million in stumpage & \$0.09 million in NEV	Assumed 14.2% decline in harvest & jobs in short term
Mushroom Harvest			up to 50 PYs in good year	Potential of \$0.15 million	B
Guide-Outfitting	Minimal	Minimal	Minimal	Minimal	b
Commercial/Food Fishery	Gitanyow/Gitxsan	8 PYs	Provincially significant from Nass salmon runs; NEV likely similar to that from forestry		B
Sportfishing	Important sportfishing area for locals, BC residents and clients of Bell II Lodge just outside Nass South area.				b
Heli-Skiing	Last Frontier Heli-Skiing generates 10 PYs of employment, but tenure extends well beyond Nass South plan area boundary.				may be small net benefit
Hunting by BC Residents	Important for grizzly bear & black bear, but less so for other large game animals such as moose, caribou and deer. Significant source of moose for First Nations consumption.				b
Mining	Very little current impact from plan area resources; most activity in Golden Triangle north of Stewart. Good mineral potential in northwestern portion of plan area.				b/c - greater land use certainty, possible loss of potential in Hanna-Tintina
Hydro-Electric Projects	Nass South SRMP has creeks and rivers which may be suitable for small hydro-electric projects; Hanna-Tintina PA includes provision of a corridor for the proposed 335 km Northwest Transmission Line between Terrace and Bob Quinn Lake.				likely no impact

1 Introduction

The purpose of this report is to provide both the socio-economic base case context and to assess the expected impacts of the proposed Nass South Sustainable Resource Management Plan (SRMP). Environmental impacts of the plan are the subject of a separate study.² This SEA builds upon and supersedes the socio-economic base case presented in draft form in June 2007.³

Building on the base case work, this assessment has entailed:

- a review of Geographic Information Systems (GIS) data provided by the BC Ministry of Agriculture and Lands (MAL) demonstrating the distribution of various resource values across resource management zones proposed by the Nass South SRMP;
- a review of estimated forest industry timber supply impacts prepared by Industrial Forestry Service Ltd., for the BC MAL, Integrated Land Management Bureau (ILMB), Skeena Region⁴; and
- a socio-economic impact assessment for selected industry sectors and communities.

1.1 Nass South SRMP Area and Key Elements of Nass South SRMP

The Nass South SRMP area covers 662,510 hectares of northwest BC, or approximately 0.7% of the total BC landbase. The area includes the community of Stewart, as well the settlements of Meziadin Junction and Ellsworth Camp. Statistics Canada reports that 542 people resided in the area in 2006, approximately 500 people in Stewart and 42 people outside Stewart.

Approximately 59% of the Nass South SRMP area is in Gitanyow asserted traditional territory (390,925 hectares). The Gitanyow communities that depend on resources from the Nass South SRMP area are located south of the Nass South SRMP area boundaries.

Approximately 74% of the area is covered by the Nass Wildlife Area (492,790 hectares) established in the Nisga'a Final Agreement, but there are no Nisga'a communities in the Nass South SRMP area.

Under the Base Case, existing Parks and Protected Areas cover 0.79% of the Nass South SRMP area. Forested areas cover approximately 44% of the Nass South, including the Timber Harvesting Land Base (THLB) which covers 16.6%, and forested areas not contributing to THLB, which cover 27% of the total area.

The following map shows the boundaries of the Nass South SRMP area.

² Fiera Ecological Consulting, *Environmental Risk Assessment for the Nass South Sustainable Resource Management Plan Area*, prepared for BC Ministry of Agriculture and Lands, June 2007.

³ Pierce Lefebvre Consulting, *Socio-Economic Base Case for the Nass SRMP*, Draft Report, prepared for BC Ministry of Agriculture and Lands, March 31, 2008.

⁴ Industrial Forestry Service LTD., *South Nass SRMP Timber Supply Analysis Report and Package*, Version 1, May 2008.

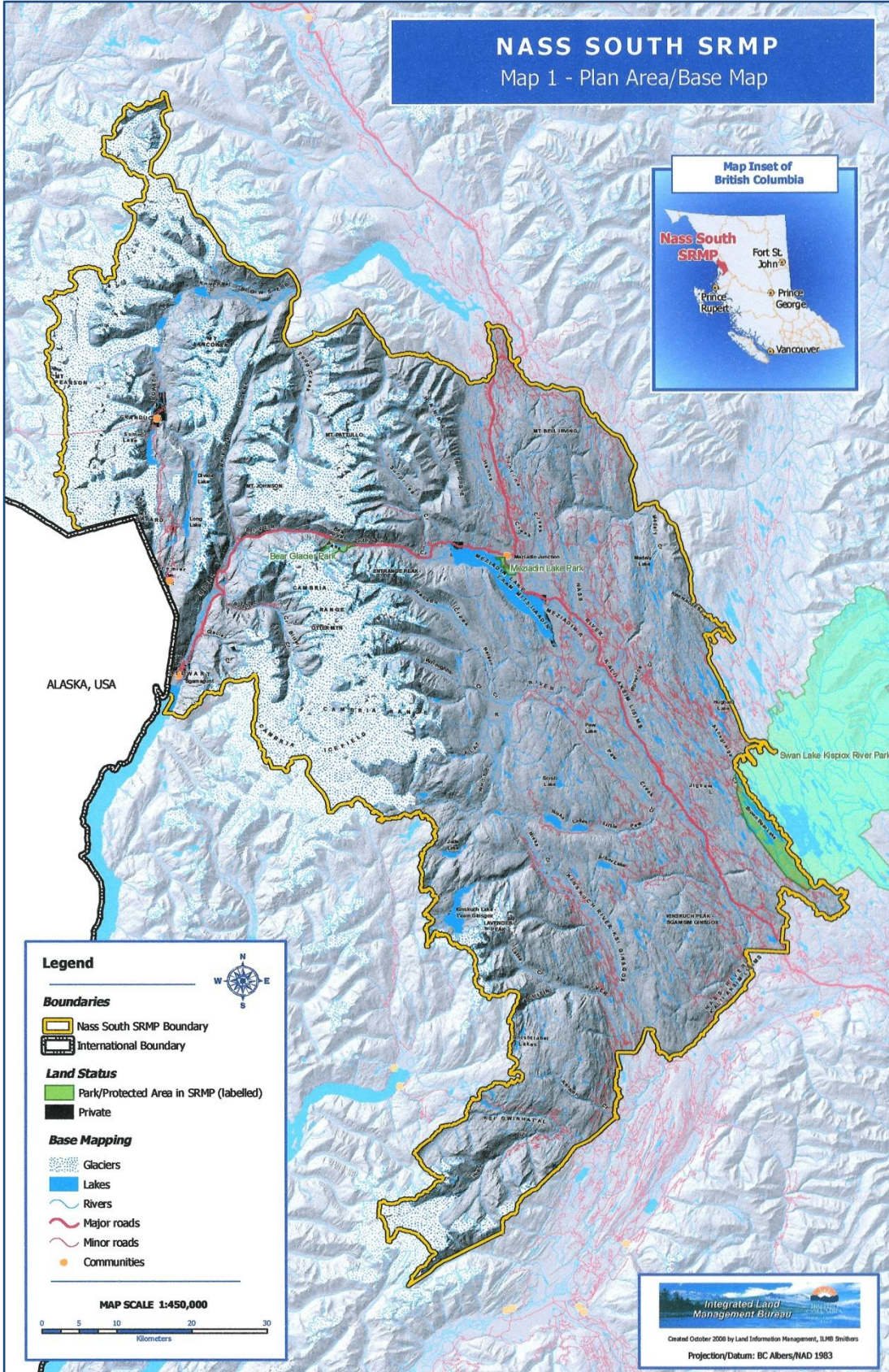
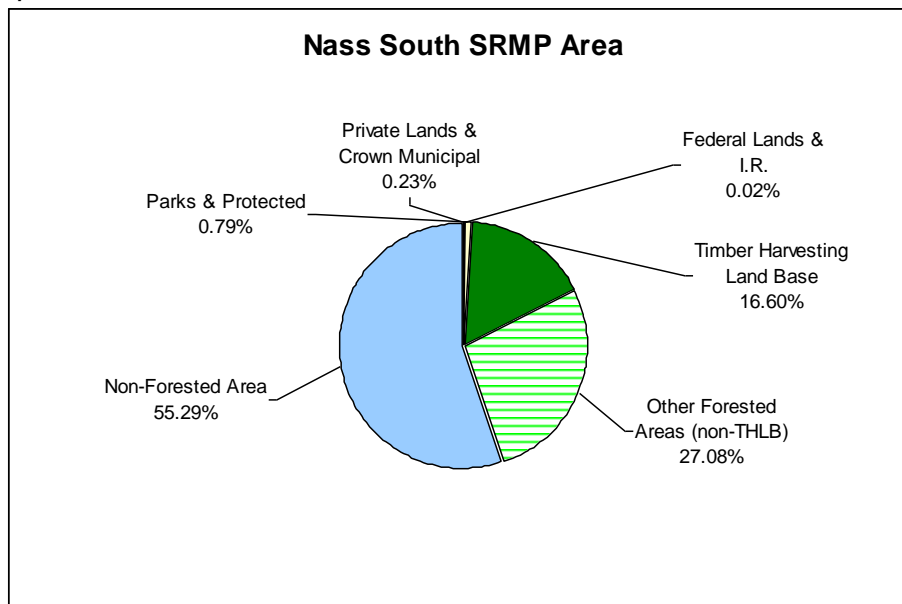


Chart 1 Components of the Nass South SRMP Area – Base Case



Note: Parks and Protected Areas, Private Lands & Crown Municipal Lands, Federal Lands and I.R. include forested and non-forested areas. Source: BC Ministry of Agriculture and Lands (BC MAL), GIS statistics, June 2007. Appendix 6 provides detailed data.

The Nass South SRMP recommendation has the following main elements:

- Proposed New Hanna-Tintina Protected Area:** The proposed Hanna-Tintina protected area comprises 24,262 hectares representing 3.7% of the Nass South SRMP area. The area is characterized by steep timbered hillsides, alpine slopes, riparian ecosystems and wetland ecosystems, that contribute to important grizzly bear and fish habitats. The lower reaches of Hanna Creek and Tintina Creek provide spawning areas for much of the Nass River sockeye fishery. The area also contains significant cultural heritage and recreation values.
- Spatial Deployment of Old Growth Management Areas (OGMAs):** A further 5.0% or 33,337 hectares of the Nass South SRMP area will be managed as OGMAs and excluded from timber harvest.
- A Forest Ecosystem Network (FEN):** Includes a network of hydriparian zones bordering several identified water bodies in which industrial timber harvesting would not be permitted. These FEN areas cover an additional 23,500 hectares (not including overlaps with OGMAs or Hanna-Tintina) or 3.5% of the plan area (based on areas defined as “FEN core” areas in the July 2008 GIS data prepared by BC MAL for this assessment).
- Other Area Specific Management Polygons:** The Nass South SRMP includes other value specific management areas focusing primarily on wildlife protection (e.g. grizzly bear high value habitat areas, mountain goat and moose winter range), fish habitat protection (e.g. riparian areas and Water Management Units for the preservation of water quality and quantity), and pine mushroom harvesting areas.
- General Management:** The Nass South SRMP establishes management direction for several other plan area resources, to be applied across the entire Nass South SRMP Crown land area. The objectives of this general management are to enhance the security of some of the area’s key resource values (e.g. cultural heritage values), through the management of site specific features, access management, ecosystem management measures and consultation.

The following table shows some of the key elements of the Nass South SRMP in table format.

Table 1 Selected Key Elements of Nass South SRMP Plan and Base Case

Nass South SRMP Area Statistics (note 1)	Base Case		Nass South SRMP	
	hectares	%	hectares	%
Private Lands	1,564	0.2%	1,564	0.2%
Federal Lands and I.R.	271	0.0%	271	0.0%
Existing Parks and Protected Areas	5,203	0.8%	5,203	0.8%
Hanna-Tintina Protected Area			24,262	3.7%
Old Growth Management Areas (OGMA)			33,337	5.0%
FEN Zones (not including OGMA or PA areas) (note 2)			23,502	3.5%
General Management Areas (note 3)			574,371	86.7%
No Specific Management Guidelines	655,471	98.9%		
Total	662,509	100.0%	662,509	100.0%

Notes:

- Each type of area is geographically mutually exclusive of the others so that the total of the areas add to 100% of the plan area. The total area noted above for the FEN hydriprarian zones exclude overlaps with OGMA and protected areas.
- FEN: Forest Ecosystem Network.
- General Management Areas include dispersed management polygons identified to manage for specific resource values such as wildlife, fish habitat, pine mushroom harvesting, water quality and cultural values.

Source: BC MAL, GIS statistics, June 2008. Appendix 6 provides detailed data.

1.2 Methodology

This Socio-Economic Assessment is consistent with the *Guidelines for Socio- Economic and Environmental Assessment (SEEA)* prepared by the BC MAL⁵. The key indicators to be addressed in a socio-economic assessment of the plan, or plan scenarios, for which base case information has been gathered include:

- Economic Development (regional and provincial)* – Expected economic activity by sector including indicators such as number of existing jobs, potential number of direct jobs, indirect and induced jobs, income etc.
- Net Economic Value by sector (mainly provincial)* –
 - For commercial sectors, the net economic value represents the above-normal financial returns (or economic rent) from a commercial activity that occur as a result of the product or service generated by that activity being in relatively fixed supply relative to demand. Rent can accrue to the entrepreneur, be captured by the land and/or resource owner (government) or be incorporated in wages paid to labour. As noted in the BC MAL Guidelines, relying solely on easily identified government resource tax revenues to compare the Net Benefits from various commercial sectors likely leads to an underestimate of the Net Benefits of sectors characterized by a large number of small producers, for example the tourism sector. If no other data are available, a more equitable and practical approach may be to add a conservative proportion (say 5%) of gross sales revenue and total wage costs to government resource tax revenues to calculate the Total Net Benefit of a commercial sector.

⁵ BC MAL, *Guidelines for Socio- Economic and Environmental Assessment*, 2007.

- For non-commercial activities such as recreation and the benefits associated with environmental resources, the net benefits fall into two categories: use-related values (e.g. recreation, food gathering, air and fresh water) and existence-related values.
- Net economic value estimates should be net of any external costs or 'negative externalities' imposed on third parties (e.g. environmental or social disturbances). Externalities are difficult to value, but may be significant.
- *Communities and Wellbeing (mainly regional)* – Expected social impacts on population, income levels, and economic diversification and stability.
- *Gitanyow Community Implications* – Specific implications for the Gitanyow, which are not addressed in the Economic and Communities and Wellbeing sections.
- *Nisga'a Community Implications* – Specific implications for the Nisga'a, which are not addressed in the Economic and Communities and Wellbeing sections.

Information has been gathered as follows.

- Review of existing studies; a list of selected references is included in Appendix 7 at the end of this report.
- Collection of data from public sources.
- Review of Geographic Information System (GIS) data prepared by BC MAL in June 2007 as part of the Base Case, and in June 2008 as part of the socio-economic assessment. The GIS data describe some of the main resource values and activities in the Nass South SRMP area for forests and mineral sectors as well as provide some basic statistics for the area such as total area, total private lands, etc. In the assessment stage, the GIS analysis overlays the various resource values and activities (e.g. timber harvesting land base, mineral potential, tourism uses, Gitanyow and Nisga'a values, etc.) with the boundaries of the areas subject to specific resource management direction (e.g. Protected Areas, no timber harvest areas, etc.).

The socio-economic Base Case and the Socio-Economic Assessment have been completed without significant consultation with stakeholders and communities. Some individual businesses operating in the area, such as the forest licensees and major tourism organizations were contacted. Consultants have also been in contact with government representatives regarding various socio-economic and environmental values, and Claude Pierce attended two of the meetings of the Nass South SRMP, one in March 2007 and one in March 2008.

1.3 Socio-Economic Base Case Management Regime

The 2007 BC MAL guidelines for conducting socio-economic assessments state, "In most cases, the socio-economic base case should be the 'status quo' including any recent regulations, and assuming that external factors such as commodity prices, and regulatory policy follow existing trends or remain the same".⁶ Elements of Base Case management in the plan area for selected resource values are summarized following, along with the corresponding management recommended by the Nass South SRMP for those values.

⁶ BC MAL, *Guidelines for Socio-Economic and Environmental Assessment*, 2007, page 5.

Table 2 Key Elements of the Base Case and Nass South SRMP Management Direction

Value	Base Case Management	Proposed Nass South SRMP Management
Parks and Protected Areas	<ul style="list-style-type: none"> 0.8% of land base or 5,203 hectares (ha) Areas include Bear Glacier Park, Meziadin Lake Park and a small portion of Swan Lake-Kispiox River Park. 	<ul style="list-style-type: none"> 4.45% of land base or 29,465 hectares Proposed addition of the 24,262 hectare Hanna-Tintina Protected Area which encompasses much of the Mount Bell-Irving/Hanna Ridge OSA noted as a Special Management Area under Base Case Management. Includes a designated utility corridor near Highway 37, where construction of a high capacity power line would be permitted if approved by the Environmental Assessment Act process.
Other Special Management Areas	<ul style="list-style-type: none"> A Use, Recreation, Enjoyment of the Public (UREP) area along the Bear River and surrounding Bear Glacier, Entrance Peak and Strohn Lake; the UREP follows Highway 37A for approximately 20 km between Stewart and Meziadin Junction and covers approximately 4,000 gross hectares excluded from timber harvesting. The Mount Bell-Irving/ Hanna Ridge area received cabinet approval as an Official Study Area (OSA) in July 1997 (approximately 11,800 hectares). (note 1) The Kwinageese Watershed Integrated Resource Management Plan (1992) was largely superseded by the Forest Practices Code and <i>Forest and Range Practices Act</i>, but some provisions regarding the management of riparian areas were considered by the Chief Forester to be incremental to the FPC. These provisions provide an additional constraint on timber harvesting in the Kwinageese watershed, a small part of which overlaps the Nass South SRMP area. Land base exclusions or partial exclusions for Environmentally Sensitive Areas having high wildlife value, high recreation value, soil sensitivity, water quality values, regeneration problems, avalanche problems, and other management difficulties (approximately 135,000 gross hectares for the Nass TSA, an area of 1.66 million ha compared with 662,410 ha in the Nass South SRMP area). 	<ul style="list-style-type: none"> Established Water Management Units (WMUs) with specific management direction to help protect water quality, quantity and stream flow patterns. These four WMUs are large areas outside the current THLB. They include an area around Mt. Bell Irving (7,970 ha) which partially overlaps the proposed Hanna-Tintina Protected Area, an area around Madely Lake/Kwinageese (12,841 ha), and area surrounding Scrub Lake (6,378 ha) and an area in the Kinskuch watershed (10,675 ha).
Water Quality and Quantity	<ul style="list-style-type: none"> Legal requirements for managing water quality and fish habitat in the Forest and Range Practices Act, Forest Planning and Practices Regulation and the Fisheries Act. No specific local management direction except for Kwinageese Watershed IRMP mentioned above. 	<p>Specific management direction to maintain water quality and quantity including management objectives to:</p> <ul style="list-style-type: none"> Limit the potential for soil surface erosion near waterbodies Manage human activities to maintain watershed stability Maintain ecological functioning of all streams, rivers, wetlands and lakes Maintain the functional integrity of floodplains and alluvial fans Restore water quality and hydrologic integrity of damaged watersheds
Visual Quality	<ul style="list-style-type: none"> The Nass South SRMP area includes 70,460 ha of land (10.6% of total area) which is managed for specific Visual Quality Objectives (VQO); this includes 19,800 ha with a Preservation VQO, 13,400 ha with a Retention VQO, 14,900 ha with a Partial Retention VQO and 22,400 ha with a Modification VQO. Cutblock adjacency and green-up requirements by landscape unit for visually sensitive areas as well as for general integrated resource management areas. 	<ul style="list-style-type: none"> As per Base Case Management

Value	Base Case Management	Proposed Nass South SRMP Management
Old Growth Retention / Coarse Filter Biodiversity	<ul style="list-style-type: none"> As per <i>Forest and Range Practices Act</i> Established preliminary biodiversity emphasis options for landscape units Established wildlife tree retention targets Retention of Wildlife Tree Patches (WTPs) for stand level biodiversity. Seral stage management provisions to maintain landscape level biodiversity, including the delineation of landscape unit boundaries and assignment of Biodiversity Emphasis Options to each landscape unit. No specific Old Growth Management Areas (OGMAs) have been designated, as these are expected to be determined by the Nass South SRMP process. The Identified Wildlife Management Strategy (IWMS) for dealing with endangered, threatened, vulnerable and regionally significant species, which provides for habitat preservation in Wildlife Habitat Areas (WHAs) and general wildlife measures. No WHAs or general wildlife measures have yet been deployed in the Nass TSA, and these are expected to be a product of the Nass South SRMP. 	<ul style="list-style-type: none"> Spatial deployment of Old Growth Management Areas (OGMAs) covering a total of 33,337 ha throughout the plan area. Spatial deployment of Forest Ecosystem Network (FEN) of hydriparian zones covering an additional 23,500 ha or 3.5 % of the plan area (not including overlaps with OGMAs or protected areas. Confirmation of landscape unit biodiversity emphasis options, as well as seral stage requirements by biogeoclimatic variant. Confirmation of Wildlife Tree retention targets. Implementation of Biodiversity Guidebook patch size distribution recommendations. Objective to maintain a diversity of coniferous and deciduous tree species. Preserve red-listed plant communities and conserve Blue-listed plant communities.
Riparian Areas	<ul style="list-style-type: none"> As per <i>Forest and Range Practices Act</i> and Forest Planning and Practices Regulation Riparian Reserves and Riparian Management Zones on all S1 to S3 class streams, as well as lakes and wetlands 	<ul style="list-style-type: none"> Riparian Reserves and/or Riparian Management Zones for a more extensive range of stream, lake and wetland classes. More extensive Riparian Reserves associated with the Forest Ecosystem Network (FEN). The SRMP provides an extensive list of riparian features, which comprise the FEN.
Timber Values	<ul style="list-style-type: none"> As per <i>Forest and Range Practices Act</i> 	<ul style="list-style-type: none"> Maintain long term health and productivity of THLB. Limit conversion of THLB for non-timber purposes.
Grizzly Bear Habitat	<ul style="list-style-type: none"> <i>Forest and Range Practices Act</i>, Identified Wildlife Management Strategy, direction to establish Wildlife Habitat Areas (WHA) and General Wildlife Measures for grizzly bears. 	<ul style="list-style-type: none"> Maintain 90% of functional thermal or security cover within identified Grizzly Bear Wildlife Habitat polygons (estimated 26,944 ha including very high, high and moderate value habitat); Other management direction to minimize bear-human conflicts.
Moose Habitat	<ul style="list-style-type: none"> Approximately 30,480 hectares, or 4.6% of plan area identified as high value moose habitat. <i>Forest and Range Practices Act</i> facilitates designation of moose winter range as Ungulate Winter Range (UWR). 	<ul style="list-style-type: none"> Supports designation of moose winter range as UWR. Provides management direction to maintain, enhance or restore function of mapped Moose Winter Range (20,572 ha). Objective to manage motorized hunting in or near moose winter range
Mountain Goat Habitat	<ul style="list-style-type: none"> Approximately 28,187 hectares or 4.3% of plan area identified as Mountain Goat Winter Range. <i>Forest and Range Practices Act</i> facilitates designation of Mountain Goat Winter Range as Ungulate Winter Range (UWR). 	<ul style="list-style-type: none"> Supports designation of moose winter range as UWR. Provides several management objectives to maintain function of Mountain Goat Winter Range (estimated 33,378 ha) through minimizing nearby roads and disturbances, particularly during the winter season.
Non-Timber Forest Products	<ul style="list-style-type: none"> Pine mushroom habitat is not specifically managed in the Nass TSA, but the Chief Forester noted in the most recent AAC Rationale that some efforts were being made to avoid or manage pine mushroom habitat in timber harvesting plans. A sensitivity analysis was undertaken to determine the impact on timber harvest levels of increasing the minimum harvestable age to 200 years on 5,250 hectares of timber harvesting land base in the entire Nass TSA thought to be prime mushroom habitat. 	<ul style="list-style-type: none"> Establishes objectives to maintain productive pine mushroom sites across the plan area, mainly through maintaining not less than 50% of forests in an age range of between 80 and 200 years old; Preliminary identification of mushroom harvesting management areas covering some 14,571 ha.
Tourism and Recreation	<ul style="list-style-type: none"> No specific management guidelines Consideration of tourism and recreation values required in forest development planning under <i>FRPA</i>. 	<ul style="list-style-type: none"> No management direction focussed specifically on tourism or recreation, but objectives to maintain cultural heritage resources as well as fish and wildlife resources; also, protected areas and no-timber harvest zones (i.e. OGMAs and FEN hydriparian zones) will help maintain tourism and recreation values.

Value	Base Case Management	Proposed Nass South SRMP Management
Mineral Exploration	<ul style="list-style-type: none"> • <i>Mineral Tenure Act, Mines Act, Mineral Exploration Code</i> 	<ul style="list-style-type: none"> • No specific management direction but acknowledges two-zone system.
Gitanyow Proposed Treaty Settlement Lands (2002 Offer)	<ul style="list-style-type: none"> • No specific management guidelines 	<ul style="list-style-type: none"> • Avoid timber harvesting on the Gitanyow proposed treaty settlement lands (2002 offer); includes 2,452 ha of current THLB
Energy	<ul style="list-style-type: none"> • No specific management guidelines 	<ul style="list-style-type: none"> • No management direction focussed specifically on energy development • Provision for a high voltage power transmission corridor through the proposed Hanna-Tintina protected area.
Cultural Sites and Values	<ul style="list-style-type: none"> • <i>Heritage Conservation Act</i> protects archaeological sites with evidence of human activity predating 1846. • Section 10 of the Forest Planning and Practices Regulation establishes an objective to conserve, or if necessary, protect cultural heritage resources. 	<ul style="list-style-type: none"> • Preserve both pre-1846 and post-1846 cultural sites, as well as cultural heritage resources through specific consultation requirements. • 400 metre buffers around cultural heritage sites.
Goshawk	<ul style="list-style-type: none"> • Yellow listed species with concern for loss of nesting and post-fledging habitat. 	<ul style="list-style-type: none"> • Maintain nesting and post-fledging habitat, as well as foraging habitat around nest and post-fledging areas
Fisheries	<ul style="list-style-type: none"> • Department of Fisheries and Oceans Canada Wild Salmon Policy. • Bull trout and dolly varden are blue-listed species in BC. 	<ul style="list-style-type: none"> • Objective to maintain or restore habitat for indigenous fish populations including several species of salmon, steelhead, and bull trout
Fur-Bearers	<ul style="list-style-type: none"> • Fisher and wolverine are blue-listed (vulnerable) species in BC and are Identified Wildlife under FRPA. 	<ul style="list-style-type: none"> • Objective to minimize impact to known high-value fisher and wolverine habitat

Note 1: From: Prince Rupert Protected Area Strategy Report, 1996, <http://wlapwww.gov.bc.ca/ske/pas/belhanna.htm>, accessed July 7th, 2007.

Source: BC MAL (ILMB), *Nass South SRMP*, July 2008; data from: BC Ministry of Agriculture and Lands (BC MAL), GIS statistics, June 2008. Appendix 6 provides detailed GIS data.

2 Economic Development and Well Being

2.1 Economic Structure

This section of the report provides a brief overview of broad economic sectors in the Nass South SRMP area, and the surrounding region. Each sector discussed in this overview is then reviewed in more detail in subsequent subsections.

Basic economic structure data are presented for three different geographic aggregations, namely the Nass TSA, a broader primary impact area comprising three Local Areas as defined by BC Stats, and First Nations reserve communities within the broader primary impact area.

BC Stats has estimated the percentage of employment and after tax-income that depends on basic economic sectors in the Nass area, based on the 2001 Canada Census data for what was called the Nass Land and Resource Management Plan (LRMP) area (roughly equivalent to the Nass TSA area) at the time of analysis in 2004.⁷ The Nass LRMP area included the Nass South SRMP area, as well as the northern portion of the Nass TSA. As the northern portion of the Nass TSA includes very few residents, for the purpose of this report, the Nass LRMP area is assumed to be reasonably equivalent to the Nass South SRMP area when reviewing demographic and socio-economic statistics.

The socio-economic statistics for the Nass TSA or the Nass South SRMP area are primarily reflective of the residents of Stewart, who comprise about 90% of the population of either area. The BC Stats data indicate the following about the Nass SRMP area:

- The public (government) sector (health/ education/ Gitanyow/ Nisga'a/ provincial and federal administration) is the largest source of employment income, accounting for 37% of jobs and 41% of after-tax income. BC Stats considers government a “basic” industry because government spending is dependent on factors external to the local economy, particularly in the short term. In the longer term, the strength of other economic sectors may affect some of those factors (such as population), and have an impact on the size of the government sector.
- Mining is the second largest source of basic after-tax income (16% of total), although that sector accounts for only 8% of total employment, indicating higher than average wages and salaries in the mining sector.
- Forestry is the third largest source of basic income (15% of total), and provides 16% of direct and indirect basic employment. The average annual timber harvest over the five years from 2002 to 2006 was 42% lower than the 322,000 m³ of timber harvested in 2001 in the Nass SRMP area, which has likely led to a decline in forest sector employment and income from the levels reported for 2001.
- The tourism sector is the second largest source of jobs, accounting for 23% of basic employment. Tourism accounts for only 8% of reported before-tax income, however, reflecting the seasonal nature of the sector, lower average earnings, and possibly a greater

⁷ Horne, Dr. Garry. BC Stats. 2004. *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas*. BC Ministry of Management Services.

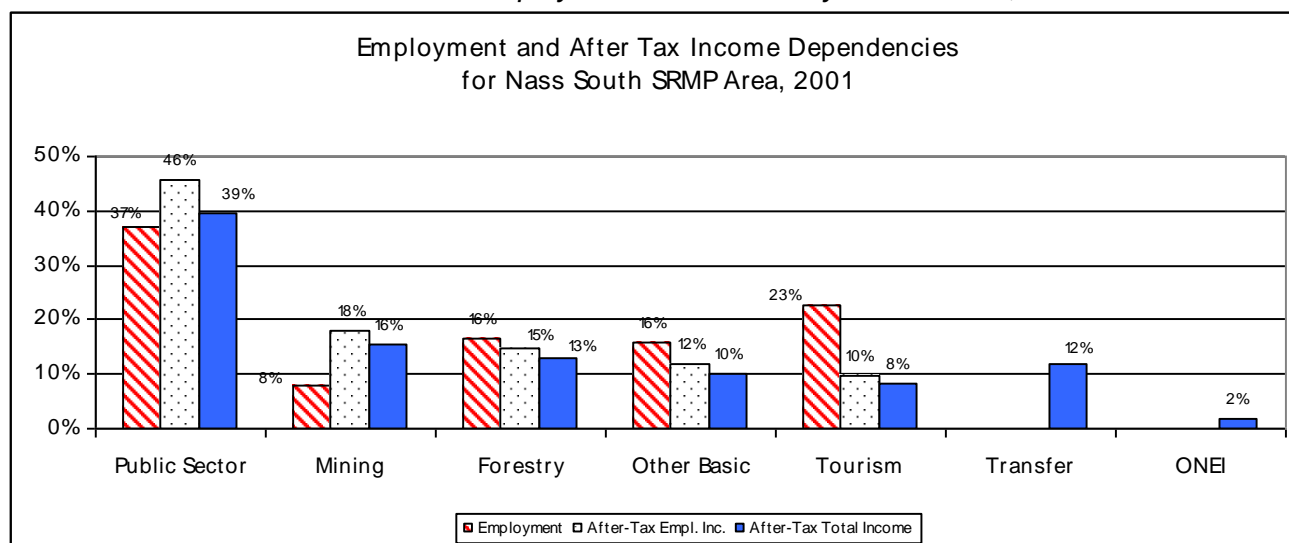
incidence of unreported income .

- Other basic sectors include construction, transportation, fish processing, trapping, and agriculture. Harvesting non-timber forest products provides seasonal employment, but it is unlikely that the Canada Census data capture much of that income.

In 2001, approximately 14% of total after-tax income was from non-employment income. This included:

- 12% from government transfer payments such as welfare payments, old age security pensions, guaranteed income supplements, Canada Pension Plan, Employment Insurance benefits, Federal Child Tax benefits and other income; and
- 2% from other non-employment income such as investment income and retirement pensions.

Chart 2 Nass South SRMP Area – Employment and Income by Basic Sector, 2001



Notes:

1. Basic employment and income for each sector is defined as the direct and indirect impacts that depend on an independent sector such as forestry, mining and tourism. This analysis considers the public sector as a basic, independent sector.
2. Other basic income includes the high technology sector, construction, and other basic sector.
3. Other income includes transfer payments and non-employment income.
4. Data are for the "Nass LRMP area" (or Nass TSA) and not the Nass South SRMP area. The Nass TSA includes the Nass South SRMP area as well as the northern portion of the Nass TSA, but since the northern portion contains only one small settlement (Bell II Lodge), the demographics and socio-economic data for the entire Nass TSA should be reflective of the Nass South SRMP area (which is primarily reflective of the municipality of Stewart).

Source: Horne, Gary, *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas*, BC Stats, 2004.

Data From the 2006 Canada Census indicates that 542 people reside within the boundaries of the Nass South SRMP (based on 2006 Canada Census data). This includes 496 residents in the Stewart District Municipality, and another 46 who reside within the Kitimat-Stikine Regional District (KSRD) Electoral Area A, which includes Meziadin Junction, Ellsworth Camp, Bell II, Cranberry Junction and the ghost towns of Alice Arm and Kitsault. Stewart, Meziadin Junction and Ellsworth Camp are the only settlements actually inside the boundaries of the Nass South SRMP area. The 2006 population of 542 is 27% lower than the 742 people residing in the Nass South SRMP area in 2001, and approximately half the population count taken in 1996. This decline in population has been primarily driven by declines in mining and forest industry activity (see Section 3 and Appendix 5 for further detail).

There are many communities that rely at least partly on the resources of the Nass South SRMP

area. While only 542 people reside within the Nass South SRMP area, the KSRD that includes the Nass South SRMP area has a population of approximately 38,000 people. Some of the communities in the KSRD are relatively far from the Nass South SRMP area boundaries. For example, Kitimat in the southern end of the KSRD is 222 km from Cranberry junction, which is just south of the southern boundary of the Nass South SRMP area.

For the purposes of tracking changes in local economies over time, BC Stats divides BC into 63 Local Areas, and the following three Local Areas are the closest to the Nass South SRMP area, and likely at least partially dependent on the resources supplied by the Nass South SRMP area.

1. **Stewart & Nisga'a Local Area:** This includes the Nass South SRMP as well as the other portions of KSRD Electoral Area A; the Nisga'a communities of Gingolx (Kincolith), Laxgalts'ap (Greenville), Gitwinksihlkw, New Aiyansh, and Nisga'a (Nass Camp and other Nisga'a); the KSRD Electoral Area D; and northern First Nations communities of Telegraph Creek 6 & 6A, Iskut 6 and Guhthe Tah 12 (near Telegraph Creek).
2. **Gitanyow/ Gixtsan & Hazelton Local Area:** This includes Hazelton, New Hazelton, Gitanmaax, Gitanyow (Kitwancool), Gitsegukla, Gitwangak (Kitwanga), Sik-e-dakh (Glen Vowell), Hagwilget, Kispiox, Moricetown (1 & 2), KSRD - Electoral Area B (includes South Hazelton, Cedarvale), Bulkley River 19 and Babine 17.
3. **Kitimat-Terrace Local Area:** This includes the Terrace District Municipality, First Nations communities near Terrace (Kshish 4, Kulspai 6), KSRD - Electoral Area E (Near Terrace), Kitasoo 1, Kitimaat 2, Kitimat District Municipality, and KSRD - Area C (includes Rosswood, Usk).

2001 economic dependency data (based on 2001 Census data) for the above Local Areas of BC show the following:

- The public (government) sector (health/ education/ Gitanyow/ Nisga'a/ provincial and federal administration) is the largest source of employment income.
- Forestry is the second largest source of basic employment income. The average annual Northwest region⁸ timber harvest from 2002 to 2006 was 35% lower than the 2.236 million m³ of timber harvested in 2001 in the Northwest region, which has likely led to a similar decline in forest sector employment and income from the levels reported for 2001.
- The mining and mineral processing sector is the third largest source of basic employment income, mainly as a result of Alcan's operations in Kitimat, and mineral exploration throughout the region.
- Tourism is the fourth largest source of employment income.
- Other basic sectors include construction, transportation, agriculture and food, fishing and trapping, and other manufacturing not attributed to a basic sector.

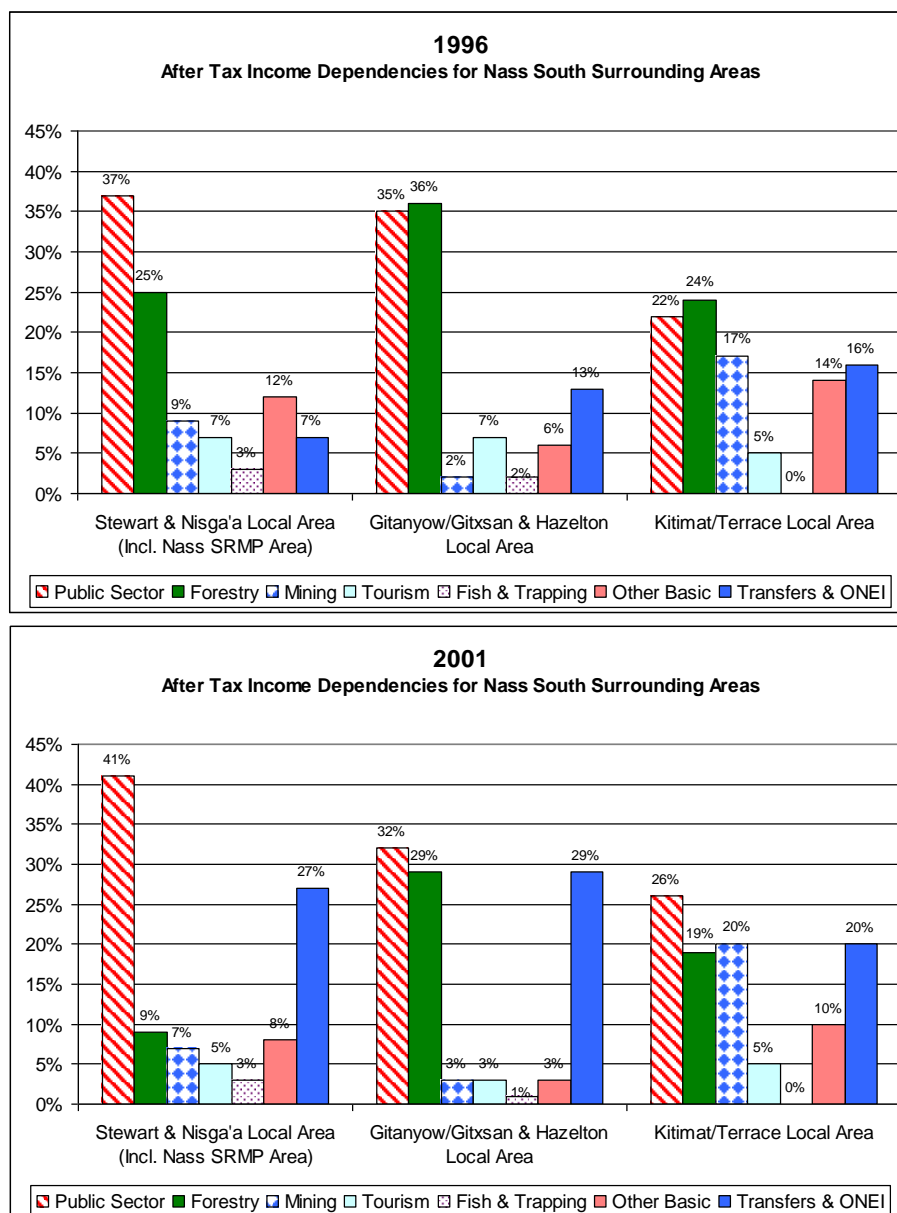
A review of income dependencies data for 1996 and 2001 for the Nass South SRMP impact area shows that transfer payments and the public sector accounted for an increasing share of after-tax

⁸ Includes harvests from the Kalum Forest District, the Cassiar TSA, the Kispiox TSA, the Cranberry TSA, and the North Coast Forest District. See Appendix 1 for more detail.

income for the region over that period. The forest industry continued to decline in importance, while other sectors such as mining, tourism and fishing either declined or maintained approximately the same share. This is illustrated in the following two charts.

Data are not available for 2006, but given the drop in timber harvest between 2001 and 2006 in the region, one would expect that further substantial declines in the share of income attributable to forest industry activities have occurred.

Chart 3 After Tax Income Dependency for Nass South Surrounding Area, 1996 and 2001



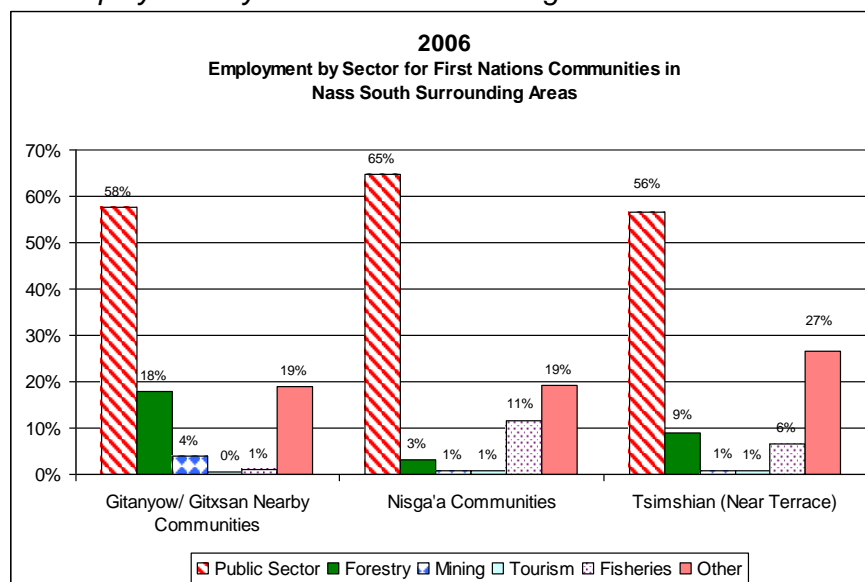
Note: Data do not add to 100% due to rounding.

Source: Horne, Gary, *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas*, BC Stats, 2004.

The BC Stats analysis does not differentiate between First Nations and other communities in the

region. Data from the Skeena Native Development Society (SNDS) indicate that the sectoral employment breakdown of First Nations communities in the Nass South SRMP impact area is similar to the overall regional economic structure (although unemployment rates in the First Nations communities are much higher than in non-First Nation communities; see Table 49 in Appendix 5). As is the case for the regional economy, the largest source of employment in First Nations communities is the public sector, followed by the forest sector. Fisheries employment is a much larger proportion of total employment in the Nisga'a communities (11%) than either the other First Nations communities or the region in general. The socio-economic structure of First Nations communities is discussed in more detail in the Community Sustainability chapter of this report.

Chart 4 Share of Employment by Sector for Surrounding First Nations Communities, 2006



Source: Skeena Native Development Society, *Labour Market Census, 2006*.

2.2 Forestry

2.2.1 Timber Resources in the Nass Timber Supply Area

The Nass Timber Supply Area (TSA) is administered by the Kalum Forest District office located in Terrace, and forms part of the Kalum Forest District, which also includes the Kalum TSA, Timber Forest Licence (TFL) 1 and TFL 41. The topography of the western part of the Nass TSA is mountainous with coastal plains and rugged ice-capped mountains. Almost all of the forest in this area is either not merchantable or is situated on environmentally sensitive locations, and is therefore unavailable for harvesting. Within the Nass South SRMP boundaries, the timber harvesting land base (THLB) is concentrated in the eastern side of the plan area.

Within the land base currently considered available for timber harvesting, western hemlock-leading stands cover about 70% of the area and subalpine fir (balsam)-leading stands cover about 20%. Lodgepole pine, Sitka spruce and western red cedar also occur in this TSA, as do lesser amounts of deciduous forests and scattered wetlands.

About 39% of the Nass TSA land base (an area 2.45 times larger than the Nass South SRMP area) is considered productive forest land. The timber harvesting land base (as determined in the TSR2 analysis and excluding the "Upper Nass" portion of the TSA which is considered inoperable

due to a combination of low timber values and inaccessibility) covers about 30% of the productive forest land, or 12% of the total Nass TSA land area. The THLB within the Nass South SRMP boundaries represents about 60% of the total Nass TSA THLB.

The majority of the THLB is considered to have poor or medium growth productivity, as measured by site indices.⁹ (The productivity of a site largely determines how quickly trees will grow, which affects volume per hectare on regenerated stands, time to reach “green-up”, and the age at which stands reach merchantable size.) Climate and soil conditions in much of the area contribute to silviculture challenges including relatively long regeneration delays after timber is harvested in the more northern portions of the TSA, and minimum harvesting ages ranging from 60 to 200 years (an overall average of 110 years) for different species/growing site combinations.¹⁰

The timber resource on the Nass TSA timber harvesting land base is comprised primarily of hemlock and sub-alpine fir (balsam) dominated stands, located in valley bottoms and low-to-mid level mountain slopes. Most stands contain a high proportion of decadent timber which cannot be utilized as sawlogs (about 80% on average), and which has been directed to pulp production in the past. The relatively infrequent occurrence of natural stand replacing events (fire) in the Nass TSA has resulted in a high proportion of old, decadent hemlock stands.

The 2001 Ministry of Forests Nass Timber Supply Area Analysis Report (TSR2) indicates that operability lines within the Nass TSA recognize cable harvesting systems on steep and broken terrain in portions of the Nass TSA. About 36% of the timber harvesting land base is classified as cable logging operable; 42% is considered conventional ground based logging operable and the remainder is considered as mixed cable and ground based operable.

2.2.2 Timber Harvesting Licensees in the Nass

The major forest licensees operating in the Nass South plan area include West Fraser Mills Ltd, Orenda Logging Ltd, Canada Resurgence Developments Ltd, Sim Gan Forest Corp. and BC Timber Sales. Orenda Logging Ltd. was a subsidiary of NWBC Timber & Pulp Ltd. The Orenda forest licence was returned to the Province under bankruptcy proceedings and has not yet been redeployed. Table 1 on the following page outlines the AACs for these licences and associated recent harvesting activity.

⁹ Ministry of Forests, *Nass Timber Supply Area Analysis Report*, June 2001, pages 28 and 44.

¹⁰ Minimum Harvestable Ages & Operability: available from: Ministry of Forests, Nass Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination, Effective January 1, 1996.

Table 3 Timber Harvest Licences in Nass TSA

Nass Timber Supply Area								
Name of License Holder	Detail/ Location	Comment on AAC and Harvest Levels	Timber Harvest (m3) from MOFR HBS			Timber Harvest From Survey - 2006	AAC (m3)	
			2004	2005	2006		2001	2007
Forest Licenses - Replaceable								
West Fraser Mills Ltd.	A16882	All conventional - Most AAC in Nass South area (2007 near Nisga'a Lakes) but some outside SRMP	40,219	18,397	4,699	9,900	232,484	162,484
Orenda Logging Ltd.	A16883	All conventional - license has been returned to province as a result of bankruptcy proceedings	0	0	0		298,908	283,963
Canada Resurgence Development Ltd./ Timber Baron Forest products (Note 1)	A16884	All conventional - previously owned by Timber Baron who manages the tenure and undertakes planning, harvesting and silviculture on behalf of Canada Resurgence;	0	46,960	47,956	61,700	314,640	291,712
Sim Gan Forest Corporation	A16886	All conventional - per HBS - no harvest in those 3 years	0	0	0		45,999	45,999
Sub-Total TSA - Forest Licenses Replaceable			40,219	65,357	52,655		892,031	784,158
Forest Licenses - Non-Replaceable		Included in BCTS				included in BCTS	54,869	
BC Timber Sales Timber Baron Forest Products		per survey data per HBS	181,174	40,627	111,459	67,800	184,000	184,000
Forest Service Reserve			0	0	0		11,500	11,500
Total			221,393	105,984	164,114	139,400	1,142,400	979,658
Adjustment Required		2007 AAC by license does not reflect full 2001 determination, see note 2.						-114,658
Total AAC								865,000
Breakdown of Nass TSA into Nass South & Nass North Portions			2004	2005	2006	2006 Survey		AAC
Nass South (larger than Nass South SRMP area)			221,393	105,984	164,114	139,400	N/A	665,000
Nass North			0	0	0	0	N/A	200,000

Notes to Table 1:

- Licence A16884 was previously owned by Timber Baron Forest Products who now manages the tenure and undertakes planning, harvesting and silviculture on behalf of Canada Resurgence
- The MOFR apportionment report is not consistent with the TSR2 AAC determination, and needs to be rebalanced. Accordingly, all licences are potentially subject to AAC adjustments of up to a 23% reduction, to account for the reduced AAC for the Nass TSA established in the Timber Supply Review completed in 2002. In addition, part of the licence AACs noted above may be required to be directed toward the 200,000m3 AAC geographic partition for the northern portion of the Nass TSA, an area widely considered to be inoperable under any currently foreseeable market conditions.
- The analysis was conducted prior to the 2007 timber harvest being available. MOFR has since reported the timber harvest for the Nass TSA at 166,565 m3 (MOFR timber harvest from MOFR Harvest Billing System, as provided by Sinclair Tedder, June 2008).

Source of Table 1: All harvest data are based on the MOFR Harvest Billing Systems.

- **Total harvest data for Nass TSA:** 2005 and 2006 were provided by Glenn Farenholtz, BC MAL, provided on April 30th, 2007; the years 2004 & prior were provided by Glenn Farenholtz, BC MAL. - data sent January 23rd, 2006.
- **Harvest data for individual forest licences - replaceable:** provided by Hubert Burger, MOFR (Terrace), on March 16th, 2007.
- **2007 AAC:** MOFR Apportionment System, Nass TSA, obtained from web site on February 01, 2007.
- **2001 AAC:** MOF, Timber Supply Review, Nass Timber Supply Area Analysis Report, 2001.

2.2.3 Primary Timber Processing Facilities

There are no wood processing facilities in the Nass South plan area. The closest wood processing facilities are sawmills located in Kitwanga at the intersection of Highway 37 and Highway 16, approximately 60 km south of the Nass South plan area boundary. Kitwanga Lumber Company operates a mill (which has been operating only sporadically over the past few years) with about 42 employees producing green hemlock, cedar, SPF and larger timbers, and has a Replaceable Forest Licence for 87,571 m³ per annum in the Kispiox TSA. C GED Forest Products has two portable sawmills operating intermittently on the site of a larger sawmill/planer mill, which has not operated for some time (used to employ about 50 people). C GED (a joint venture between the Gitwanga Band and Interpac) was awarded a six-year 100,000 m³ per annum non-replaceable licence in the Cranberry TSA in 1995, and was to maintain 50 timber processing jobs, create another 50 jobs in primary manufacturing, and build a \$3 million value-added mill creating another 35 jobs.¹¹

West Fraser Mills operates a sawmill/planer mill and whole log chipper complex in Terrace, and the region's only pulp mill, Eurocan in Kitimat. West Fraser is the third largest public forest lands licensee in BC with a total AAC of about 5.7 million m³ across 21 licences¹², and a major North American integrated forest products producer with mills in BC, Alberta and the US. The Terrace sawmill is small relative to other West Fraser sawmills and was operating below capacity on a one-shift basis until October 29, 2007 when it was shut down (the planer operated on a temporary basis for 6 weeks after that date, to process the inventory of rough lumber at the mill). The expected duration of the shutdown is unknown.¹³

Eurocan Pulp and Paper Co. (Eurocan) in Kitimat is a division of West Fraser Timber Co. Ltd. Mills. Eurocan operates two paper machines and produces unbleached linerboard and kraft paper that are distributed worldwide to producers of paper bags, shipping boxes, and other corrugated shipping containers.¹⁴ In its 2006 annual report, West Fraser indicates that all of its fibre requirements can be met directly and indirectly through its own forest tenures. Eurocan's fibre supply needs are primarily met through chips produced as a by-product of the West Fraser mills in Terrace, Houston, Smithers and Fraser Lake.

¹¹ Ministry of Forests News Release, Feb 24, 1995, Reference 1995:022

¹² Ministry of Forests and Range, *Apportionment System, Provincial Linkage AAC Report*, 2007-04-03, <http://www.for.gov.bc.ca/hth/apportionment/Documents/Aptr043.pdf>.

¹³ West Fraser Timber Co. Ltd., News Release West Fraser Timber Co. Ltd., October 24, 2007, <http://www.westfraser.com/index.asp>.

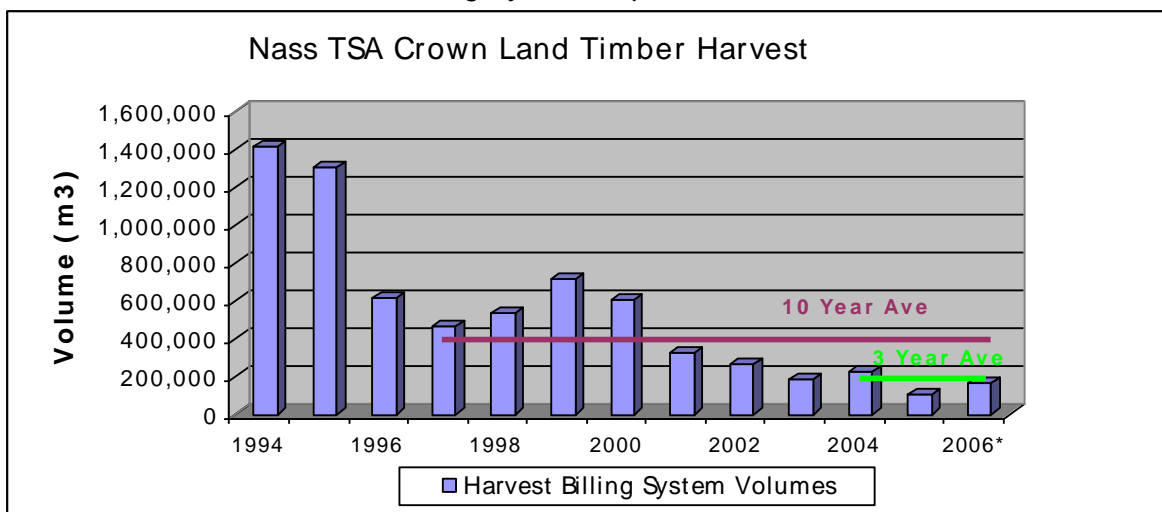
¹⁴ West Fraser Timber Co. Ltd., February 2007, *Annual Report, 2006*, available from: <http://www.westfraser.com/ir/ar/index.asp> (accessed May 8th, 2007).

2.2.4 Historical Timber Harvest in the Nass TSA

The annual timber harvest from the Nass South plan area can be approximated by the timber harvest data from the Nass TSA, although there has been some timber harvesting in the Nass TSA north of the northern boundary of the plan area.

Timber harvest from the Nass TSA has averaged 357,000 m³ over the last 10 years (1997 through to 2006), and 164,000 m³ over the last 3 years (2004 through 2006), and it was 166,565 m³ in 2007. As shown in the following graphic, the rate of timber harvesting has dropped dramatically since harvests of over one million cubic metres in 1994 and 1995.

Chart 5 Nass TSA Harvest Billing System Reported Volume



Source: Prepared by Ministry of Agriculture and Lands from MOFR Harvest Billing System data.

The current Allowable Annual Cut (AAC) from Crown lands for the Nass TSA is 865,000 m³, including a geographic partition of 200,000 m³ for the northern portion of the TSA (Nass North), which is well outside the plan area boundaries. The long term potential harvest projected in the Nass TSA base case projection for TSR2 was 407,000 m³, reached in the 8th decade after 10% stepdowns from a harvest level of 820,000m³ in the first decade of the projection (these projections excluded all of the Nass North area from the operating landbase).

The following table summarizes the historical 3 year (2004, 2005 and 2006), 5 year (2002-2006) and 10 year timber harvests for the Nass TSA (1997-2006), and other neighbouring timber supply management units. On average over the last 10 years, an estimated 16% of the northwest regional timber supply originated from the Nass TSA.

Table 4 Kalum/Cranberry/Kispiox/North Coast Regional Timber Supply (m3)

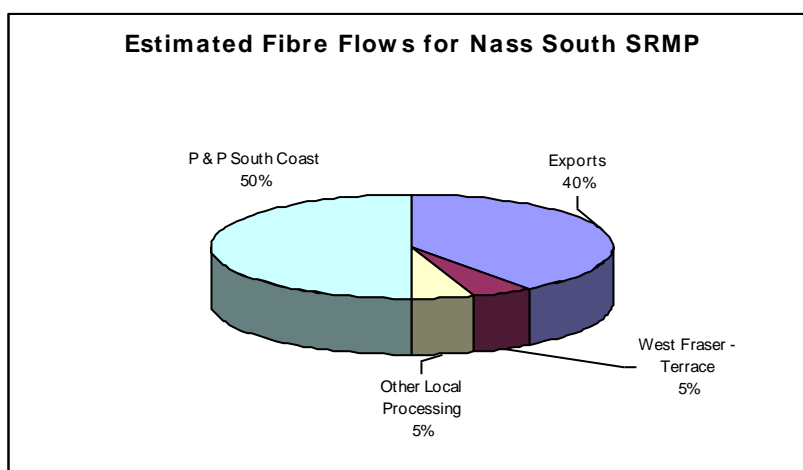
Management Unit	3 Year Average Harvest	5 Year Average Harvest	10 Year Average Harvest	Current AAC
Kalum Forest District				
Nass TSA				
Nass North Partition	0	0	0	200,000
Nass Remainder	163,830	186,902	357,325	665,000
Kalum TSA	143,806	159,885	248,469	436,884
TFL 1	122,234	112,931	324,187	611,000
TFL 41	222,877	234,472	268,672	400,000
Other Kalum	16,415	33,404	34,294	N/A
Total Kalum				
Cassiar, Kispiox, and Cranberry TSAs	323,499	327,853	594,496	1,412,000
North Coast Forest District	385,491	398,321	430,900	435,624
Total Region	1,378,153	1,453,768	2,258,343	4,160,508
Total Region Excluding Nass North Partition	1,378,153	1,453,768	2,258,343	3,960,508
Nass TSA % of Total Excluding Nass North Partition	11.9%	12.9%	15.8%	16.0%

Note: The analysis was conducted prior to the 2007 timber harvest being available. MOFR has since reported the timber harvest for the Nass TSA at 166,565 m3 (MOFR timber harvest from MOFR Harvest Billing System, as provided by Sinclair Tedder, June 2008).

2.2.5 Fibreflows from the Nass TSA

An estimated 10% of the timber harvested in the Nass TSA is processed at the West Fraser mill in Terrace, which has been temporarily closed since October 2007, and at other mills nearby. Approximately 40% is exported to Asia and the US, and the balance, or some 50% is processed by pulp and paper mills or chipping operations on Vancouver Island and in the BC Lower Mainland.

Chart 6 Estimated Fibre Flows for Nass South SRMP



Source: Estimated by Pierce Lefebvre Consulting based on various sources, Appendix 1 provides more detail.

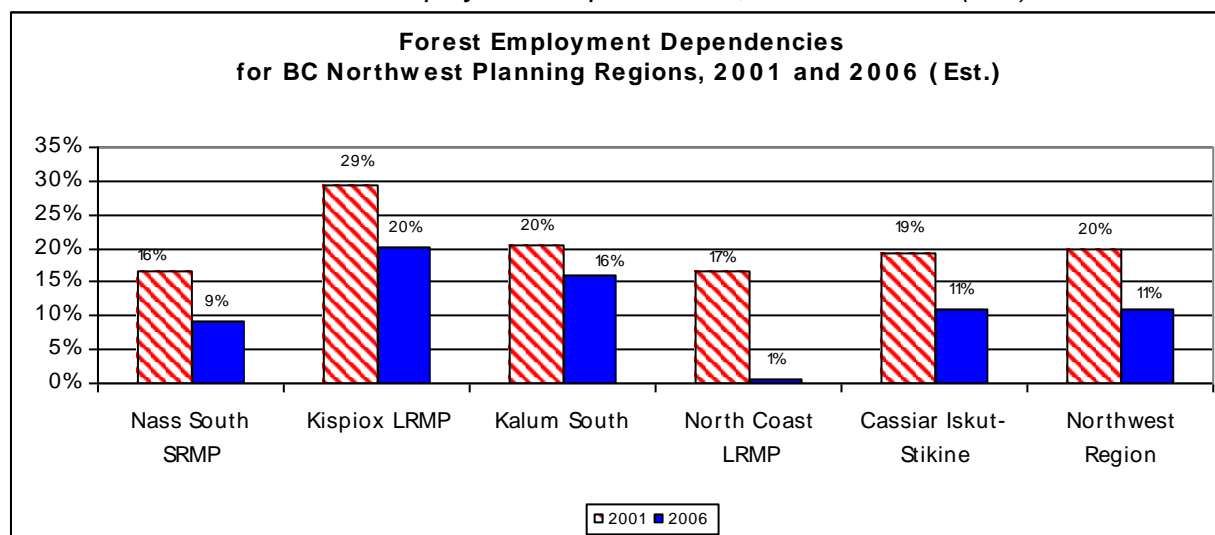
Log exports from BC are subject to various restrictions.¹⁵ Since 1985, the BC Government has allowed 100% exports of logs produced within the Nass TSA for a special fee-in-lieu of manufacturing of \$1.00 per m³ of export volume. Between 1996 and 2006, approximately 25% of the Nass TSA harvest has been exported, but that percentage has been higher in recent years. Appendix 1 provides more detail.

Of the 4.8 million m³ of logs exported from BC in the fiscal year ending March 31, 2006, 99% are coniferous sawlogs, 0.4% are coniferous pulplogs (or 18,000 m³) and deciduous species account for the other 0.6%.¹⁶ The mix of grades and species within the Nass TSA limit log exports as there is very little offshore market for the low grade hemlock-balsam logs prevailing in the TSA, and shipping costs to Asia and other offshore markets are simply too high to feasibly export such low grade logs at current log prices.

2.2.6 Employment Impacts of Nass TSA Forest Industry on BC Northwest Region

In 2001, the forest industry accounted for some 16% of basic sector employment for the Nass South SRMP area, and 12% of basic before-tax income, at a level of harvest of approximately 322,000 m³ for the Nass TSA. In 2006, average harvest levels dropped to approximately 164,000 m³. Assuming that logging employment in the Nass South SRMP is directly linked to the harvest, this would result in a drop in employment dependencies from 16% in 2001 to an estimated 9% in 2006. While forestry is no longer the dominant economic sector of two decades ago, it continues to be an important source of employment for the region. A similar analysis for the region shows the employment dependencies from forestry dropping from approximately 20% in 2001 to an estimated 11% in 2006, assuming all other sectors remain at the same level as in 2001.

Chart 7 Forest Employment Dependencies, 2001 and 2006 (Est.)



Source: Pierce Lefebvre Consulting estimates based on BC Stats data; Appendix 6 provides detailed data.

¹⁵ For a history of log export policies, see: Dumont, Bill and Don Wright, 2006, *Generating More Wealth from British Columbia's Log Export Policies*, a report for the BC Minister of Forests and Range, pages 21 to 31, with specific references to Nass TSA on page 29.

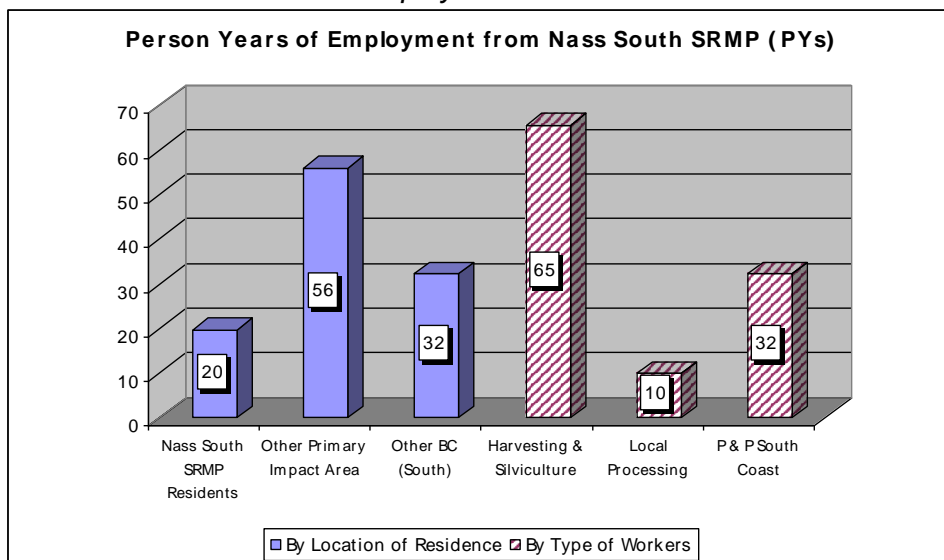
¹⁶ Ibid, page 97, based on Statistics Canada data.

The 2006 harvest of approximately 164,000 m³ of timber, mainly from the Nass South SRMP area, is estimated to have generated 108 direct Person Years (PYs) of employment throughout BC.

The 65 PYs of employment generated in harvesting and silviculture mainly accrue to people residing in the Nass South SRMP area, and in the primary impact area (mainly in Terrace).

The Nass TSA harvest accounts for approximately 10 PYs of employment at the local mills including West Fraser in Terrace, which temporarily closed October 2007. The balance or approximately 32 PYs of direct employment are at chip mills and pulp and paper mills elsewhere in BC.

Chart 8 Person Years of Employment from Nass South SRMP Area – Base Case



Notes:

- This includes all PYs of employment from the Nass TSA, not just the portion from the Nass South SRMP Area.
- Does not add due to rounding

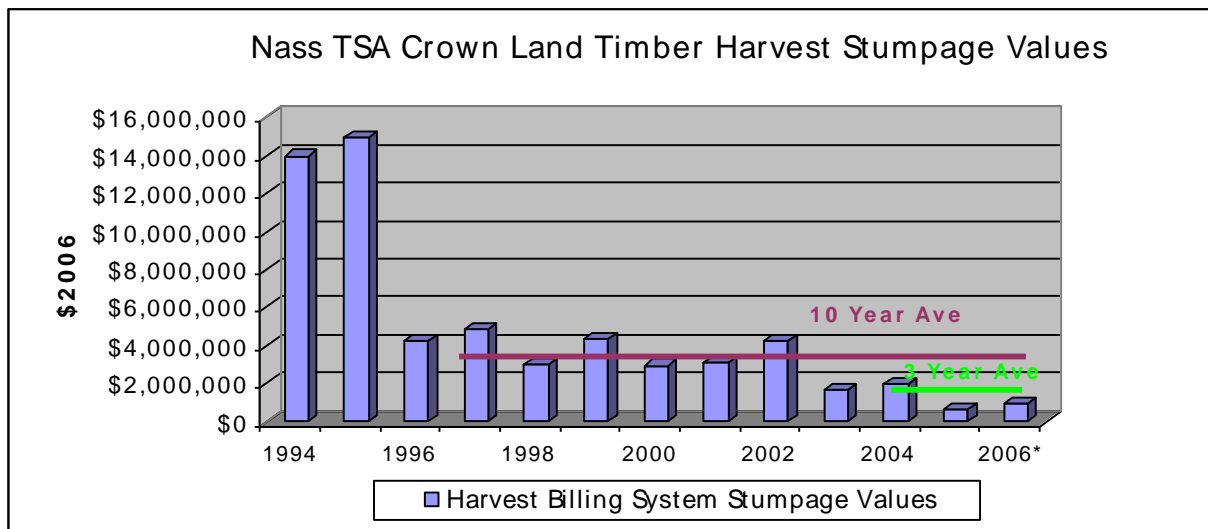
Source: Estimated by Pierce Lefebvre Consulting based on various sources, Appendix 1 provides more detail.

On a per m³ basis, the forest industry in the Nass TSA generates approximately 0.66 PYs of direct employment per m³ of wood. This is based on a total harvest of approximately 164,000 m³ and takes into account the 40% of the harvest that is exported without any local processing. More details on the forest industry coefficients for the Nass TSA are presented in Appendix 1.

2.2.7 Nass TSA Stumpage Revenues and Net Economic Value

Annual stumpage revenues from the Nass TSA totalled \$946,000 in 2006 (\$5.77 per m³), down from a 3-year average of approximately \$1.2 million (\$7.35 per m³) (\$2006) and only a fraction of the \$14.9 million (\$2006) collected in 1995, when stumpage rates averaged \$11.42 per m³ (\$2006) and 1.3 million m³ of timber was harvested.

Chart 9 Nass TSA Annual Stumpage Revenues, 1994-2006



Note: The analysis was conducted prior to the 2007 timber harvest being available. MOFR has since reported the timber harvest for the Nass TSA at 166,565 m³ (MOFR timber harvest from MOFR Harvest Billing System, as provided by Sinclair Tedder, June 2008). Source: BC MOFR Harvest Billing System; Appendix 1 provides the detailed data.

An increasing proportion of the timber harvest in the Nass TSA results from BC Timber Sales (BCTS). Contrary to conventional replaceable forest licences, Timber Sale Licences do not generally carry silviculture obligations or require extensive road building by the licensees, both of which are typically contracted separately by BCTS. Therefore, the reported billed values in the MOFR Harvest Billing System for Timber Sale Licences are not comparable with those reported for replaceable forest licences. For example, over the five years from 2002 through 2006 the average stumpage rate for timber harvested under conventional replaceable forest licences was \$0.55 per m³, while the average stumpage rate for timber harvested under BCTS licences was \$15.32 per m³.

The BC MOFR Revenue Branch compiled and published annual average stumpage rates (weighted by volumes harvested) for Forest Districts and Forest Regions across BC from 1997 to 2002. These averages distinguish between BC Timber Sales (formerly Small Business Forest Enterprise Program) volumes and all other types of harvesting licences. The data indicate that the average annual stumpage rates for the "All Others" category in the Kalum Forest District is generally the lowest of all forest districts in the province, and has been consistently less than \$1.00 per m³ since 1999.

Table 5 Annual Average Stumpage Rates (nominal \$ per m³)

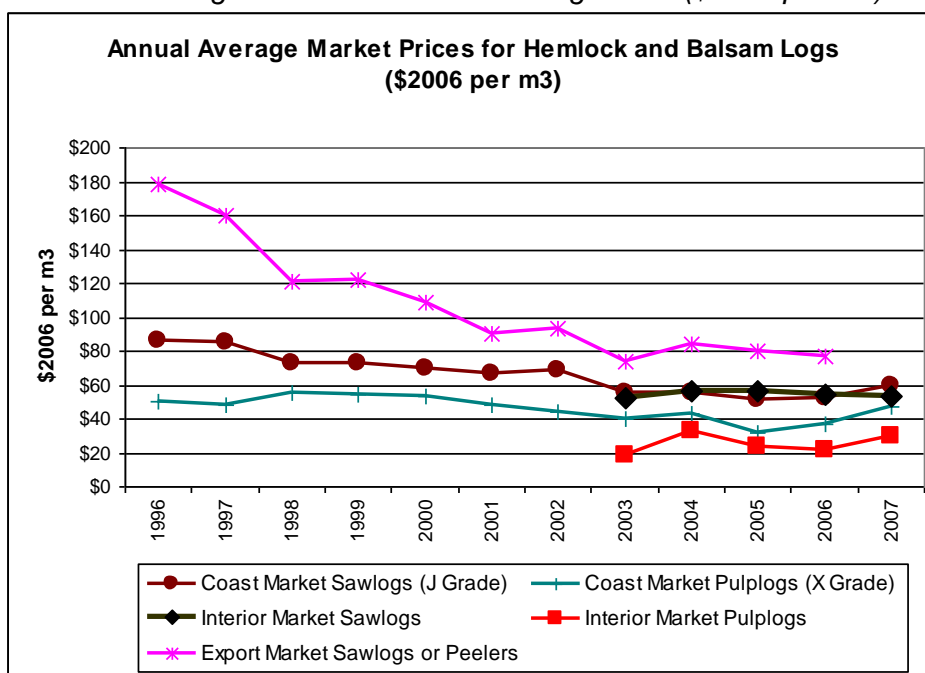
BC MOFR Revenue Branch Average Stumpage Rates	Small Business/BC Timber Sales			All Others		
	Kalum FD	Rupert Region	BC Average	Kalum FD	Rupert Region	BC Average
1997	\$17.86	\$35.49	\$42.31	\$3.35	\$23.85	\$27.69
1999	\$10.53	\$21.39	\$26.98	\$0.39	\$16.44	\$20.08
2000	\$15.48	\$26.21	\$30.01	\$0.55	\$15.77	\$21.20
2001	\$17.40	\$18.13	\$26.25	\$0.31	\$13.15	\$17.79
2002	\$18.14	\$14.58	\$23.89	\$0.36	\$15.33	\$18.44

Source: BC MOFR Revenue Branch, Volumes and Average Stumpage Rates, Annual Summaries; <http://www.for.gov.bc.ca/hva/timberp/volumerates/index.htm>

One of the main reasons for the lower stumpage rates in recent years has been the drop in realized lumber prices, which since 2001 has partly resulted from an increase in the value of the Canadian dollar. Between 2001 and 2007, the Canadian dollar has increased by over 50%

relative to the U.S. dollar from US\$0.63 per C\$ at year-end in 2001 to over US\$0.95 per C\$ in 2007. The following chart presents log prices for hemlock and balsam between 1996 and 2007.

Chart 10 Annual Average Hemlock and Balsam Log Prices (\$2006 per m3)



Source: Prepared by Pierce Lefebvre Consulting based on:

- Ministry of Forests Revenue Branch, *Historical Coast Log Market Reports (1996-2007)* and *Historical Interior Log Market Reports (2003-2007)*; and from
- Statistics Canada, as provided by Dan Schrier, BC STATS (Ministry of Labour & Citizens' Services)

Net Economic Value

On average, harvesting timber in the Nass South SRMP area generates \$3.80 per m3 in net economic value. This includes:

- Public sector rent estimated at \$2.00 per m3: While average stumpage revenues on BC Timber Sales for the Nass TSA averaged \$15.32 per m3 between 2002 and 2006 (applies to 77% of total harvest), this is before any allowance for silviculture and road building costs. Stumpage revenues are much lower on non-BCTS forest licences, averaging \$0.55 per m3 (applies to 33% of total harvest) for the same period.¹⁷
- Labour rents are estimated as 5% of total wages and salaries for direct labour (the rationale for this is explained in Section 1.1 of this report).
- Industry rents are considered minimal as the forest industry in BC is widely believed to be earning “below average normal returns” to capital. Between 1986 and 2004, the Return on Capital Employed (ROCE) for the BC forest industry has averaged 6%, although in some years such as 1987 and 2004, the ROCE achieved very healthy rates, namely 17.4% in 1987 and 14.6% in 2004. The higher profitability in those years, however, was mainly due to above

¹⁷ -Based on harvest data for individual forest licences, provided by Hubert Burger, MOFR (Terrace), on March 16th, 2007.

average returns in the BC interior sector rather than Coastal BC.¹⁸

The net economic value accounting is incomplete, however, as it does not consider externalities arising from forestry sector activities. Concerns expressed by SRMP representatives suggest that there are negative externalities associated with the current rates and methods of timber harvesting, in the form of costs to environmental, social and other economic values.

2.2.8 Overview of Nass TSA Forest Industry Potential

The Nass TSA timber supply outlook is framed by two dominant influences: a large supply of high volume existing old growth forest with diminished market value due to extensive decadence; and a high percentage of lower productivity growing sights, which will lead to better quality but lower volume second growth forests.

These influences lead to a substantial ‘falldown’ effect in long term timber supply projections, where the potential sustainable rates of harvest (by volume) in second growth managed stands are much lower than rates possible while harvesting old growth stands. For example, the base case harvest projection in the TSR2 analysis¹⁹ modelled a harvest of 820,000m³ per year for the first decade of the projection, followed by 10% declines each decade to a long term constant harvest level of 407,000m³ by the 8th decade of the projection. This projection anticipated harvesting exclusively old growth stands for the first 11 decades, before transitioning to predominantly second growth harvesting in the 12th decade.

A third major factor determining the long term harvest potential in the Nass TSA is the combined influence of harvesting costs, harvesting technologies and timber market values on land base operability. The Nass TSA operates at the margins of economic feasibility, and small changes in economic parameters can have large impacts on the volumes of timber that are feasibly harvestable. Decision rationale documents for the Nass TSA timber supply reviews (TSR1 and TSR 2) produced by BC’s Chief Forester have expressed concerns about operability in the Nass TSA. Those concerns have centered on both the long term accessibility and operability of large areas of the TSA (particularly Nass North) where no harvesting has yet occurred, and on the sporadic operability of steep sloped sites where cable logging is required (which included about 50% of the then defined THLB).

The markets for low quality hemlock and balsam logs, as well as better quality hemlock and balsam saw logs will be key to the economic feasibility of harvesting timber in the Nass TSA for at least the next 10 decades. The closure of the Skeena Forest Products pulp mill in Prince Rupert in 2001 dramatically reduced the market for pulp quality logs from the Nass TSA. Additionally, demand for old growth hemlock logs in both North American and overseas markets declined in the late 1990s, and has yet to recover. These market factors have restrained development of timber harvesting in the Nass TSA, and are substantially responsible for the ongoing undercut of the AAC over the past decade.

During stronger pulp market cycles, pulp log values can rise sufficiently to allow shipment of pulp logs from the Nass TSA to southern BC pulp mills. When this combines with receptive markets for hemlock and balsam sawlogs, timber harvesting in the Nass TSA becomes more economically

¹⁸ Based on PriceWaterhouseCoopers data; as reported in: BC Competition Council, Wood Products Industry Advisory Committee, Report to the Council, March 31st, 2006.

¹⁹ Ministry of Forests, *Nass Timber Supply Area Analysis Report*, June 2001, pages 25 and 26.

feasible. The required market cycles have not occurred frequently enough, nor lasted long enough to support sustained utilization of the Nass TSA AAC.

Finding reliable markets for pulp quality logs is the greatest of the market challenges facing the Nass TSA timber industry, and is a problem that is common to the entire region. A 2004 report for the City of Terrace Forestry Task Force Implementation Committee²⁰ noted some potential alternate users and uses of low quality logs including sawmills with enhanced recovery technologies to better utilize partially decadent logs, fuel for thermal power generation plants, and panel board manufacturing.

The very low proportion of pine forests in the Nass TSA may provide an opportunity to take on a more significant role in the interior BC mid-term timber supply picture. The mountain pine beetle epidemic is expected to result in sharp declines in timber supply in areas to the east of the Kalum and Kispiox Forest Districts beginning in approximately 10 years. The Nass TSA may then experience greater demand for its timber resources from the province's timber processors. The BC Ministry of Forests and Range has recently announced²¹ incremental silviculture investments intended to enhance the productivity of second growth stands in the Northwest, with the intension of accelerating the readiness of these stands for harvest to target the expected mid-term timber supply gap.

2.2.9 Base Case and Nass South SRMP Management for Forestry

The Nass South SRMP area lands are managed for forestry under the *Forests Act* and *Forest and Range Practices Act* (FRPA), which include an integrated resource management approach to maintaining non-timber values provided by the forested land base.

Table 2 in Section 1 summarizes the key elements of the Base Case and Nass South SRMP management direction. As noted in that table, key elements of the Nass South SRMP that have timber harvesting implications include:

- parks and protected areas,
- specific management direction to maintain water quality and quantity,
- Old Growth Management Areas (OGMAs),
- Forest Ecosystem Network (FEN) hydrosiparian areas,
- Pine mushroom sites,
- Wildlife habitat areas for grizzly bear, moose winter range, and mountain goat winter range, and
- Cultural site preservation.

As indicated in that table, the Visual Quality Objectives (VQOs) under the Base Case regime will remain the same under the Nass South SRMP, although a greater percentage of these are now in no-timber harvest zones (including PAs, OGMAs and FEN hydrosiparian zones). The table also notes that the Nass South SRMP has established Water Management Units, but these are outside the current THLB, and are therefore not affecting timber harvesting.

²⁰ City of Terrace Forestry Task Force Implementation Committee, *Final Report*, February 2004.

²¹ BC Ministry of Forests and Range, News Release 2007FOR0084-000784, June 13, 2007.

2.2.10 Nass South SRMP Benefits to Forest Sector

The primary benefit of the Nass South SRMP to the forest sector will be to reduce conflict between timber harvesting and other values. Documented conflict between timber harvesters and other land and/or resource users in the Nass South SRMP area include conflicts with specific First Nations' values, wildlife habitat, fish habitat, and botanical forest products.

For example the Gitanyow Hereditary Chiefs have indicated that past road development and logging operations have damaged and destroyed traditional use sites and potential archaeological sites on Gitanyow Territories. They have expressed concern that continued development and logging will destroy or damage additional traditional use sites and potential archaeological sites, and will continue to diminish their abilities and opportunities to:

- provide archaeological evidence to establish proof of Gitanyow occupancy and use of their traditional territories,
- educate future generations about Gitanyow history and culture,
- use the sites in the future to exercise Aboriginal Rights and continue traditional uses on their territories, and
- develop future Gitanyow economics through cultural tourism and education.

The Gitanyow Hereditary Chiefs are also concerned that:

- timber harvesting will continue to alter forest and stream habitats, thereby changing forest conditions required to produce the plants, animals, birds, and fish that are necessary for Gitanyow traditional uses;
- forests on Gitanyow territories will continue to be harvested but not adequately reforested and tended through time; and
- significant portions of the currently defined timber harvesting land base are not economically operable, and harvest tends to be focussed only on the most profitable areas, at a harvesting rate that is ultimately not sustainable.

Reaching a consensus agreement between the Gitanyow and timber harvesting licensees on the timber harvesting land base and appropriate harvesting practices, would allow the forest industry a better chance to deal with the economic challenges of harvesting the full sustainable annual volume determined by such an agreement. It would also provide a framework for a locally and provincially sanctioned social contract for users of timber lands and timber resources in the Nass South SRMP area.

The Nass South SRMP includes provisions such as consultation protocols to diminish the extent of existing or potential future conflict between timber harvesting, First Nations and ecological values.

The forest industry has pursued and achieved various forest harvesting certification standards, and continues to pursue others. The effort and cost involved in achieving certification indicates that the forest harvesting licensees expect certification to be beneficial. The Nass South SRMP supports certification initiatives by providing strategic guidance to Sustainable Forest Management Planning, and by contributing to documentation of the spatial occurrence of resource values on the landscape.

2.2.11 Impacts of the Nass South SRMP on Timber Supply Volumes

The 2001 Timber Supply Review (TSR2) base case timber supply projection for the Nass TSA²² modelled a harvest of 820,000 m³ per year for the first decade of the projection, followed by 10% declines each decade to a long term constant harvest level of 407,000m³ by the 8th decade of the projection. This projection is the benchmark against which the impacts of the Nass South SRMP area are estimated in the following analysis.

Several management initiatives under the proposed Nass South SRMP will lead to reductions in the THLB accessible for commercial timber harvesting. Timber supply modelling conducted specifically to gauge the likely impacts of the Nass South SRMP management proposals on timber supply produced the estimates shown in the following table. Because the Nass South SRMP area is smaller than the Nass TSA, the table also calculates the impacts the plan may have within the context of the larger Nass TSA.

Table 6 Impacts of Nass South SRMP on Timber Supply Volumes (AAC)

Forestry Impacts of Nass South SRMP - Scenario Description		Short Term Harvest Level (current AAC)		Long Term Harvest Level		Initial THLB	
		m ³ /year	% change relative to previous scenario	m ³ /year	% change relative to previous scenario	hectares	% change relative to previous scenario
Impacts on Nass South SRMP Area:							
1	Base Case (Nass South SRMP Area Only - see note 1)	557,392		290,224		134,598	(note 2)
2	Remove Gitanyow cultural areas	547,739	-1.73%	285,200	-1.73%	132,146	-1.82%
3	Remove Hanna Tintina PA	525,720	-4.02%	273,721	-4.02%	127,136	-3.79%
4	Remove OGMAs	503,129	-4.30%	262,040	-4.27%	119,849	-5.73%
5	Apply mature & Old Growth biodiversity constraints	503,129	0.00%	262,040	0.00%	119,849	0.00%
6	Remove FEN Hydroriparian Zones (note 3)	484,547	-3.69%	252,345	-3.70%	115,793	-3.38%
7	Remove Grizzly & Mountain Goat and apply old growth seral constraint to moose areas	465,844	-3.86%	242,609	-3.86%	111,234	-3.94%
8	Apply 400 m buffer around cultural sites and additional pine mushroom differences - Final Harvest Levels/ THLB for Nass South SRMP Area	463,441	-0.52%	241,348	-0.52%	110,871	-0.33%
	Scenario 13 - Closest to Final Plan (note 4)	462,735	-0.15%	240,974	-0.15%	110,871	0.00%
	Cumulative Impacts of Nass South SRMP on Plan Area	94,657	-16.98%	49,250	-16.97%	23,727	-17.63%
	Add Portion of Nass TSA not affected by Nass South SRMP (note 1)	107,608		116,776			
	Total Nass TSA Excluding Upper Nass:						
	Base Case	665,000		407,000			
	Nass TSA with Nass South SRMP Implemented (Excluding Upper Nass)	570,343	-14.23%	357,750	-12.10%		

Notes:

1. The Nass TSA includes the Upper Nass (AAC of 200,000 m³) and the Lower Nass area (AAC of 665,000 m³). The Nass South SRMP area is in the Lower Nass, and its AAC is 83% of the Lower Nass AAC.
2. ILMB GIS data (Appendix 6) indicates a Base Case THLB of 136,603 hectares, which was adjusted downward by Industrial Forestry Service Ltd. to account for road areas, to the Base Case THLB of 134,598 hectares.
3. The Timber Supply Analysis modelled the Nass South SRMP FEN Core Areas, which preceded and are slightly different than the FEN hydroriparian zones.
4. Scenario 13 in the Timber Supply Analysis is the option that most closely resembles the Nass South SRMP in September 2008, at the time of this analysis.

²² Ministry of Forests, *Nass Timber Supply Area Analysis Report*, June 2001, pages 25 and 26.

5. The impacts attributed to each management objective in the timber supply assessment depends on the order by which each scenario is assessed; a different order would yield different results for each objective, but the cumulative impacts would be the same.
6. The Gitanyow cultural areas are the Gitanyow proposed treaty settlement lands (2002 offer).

Source:

Nass South SRMP Timber Supply Impacts: Industrial Forestry Service Ltd., *South Nass SRMP Timber Supply Analysis Report & Information Package*, May 2008.

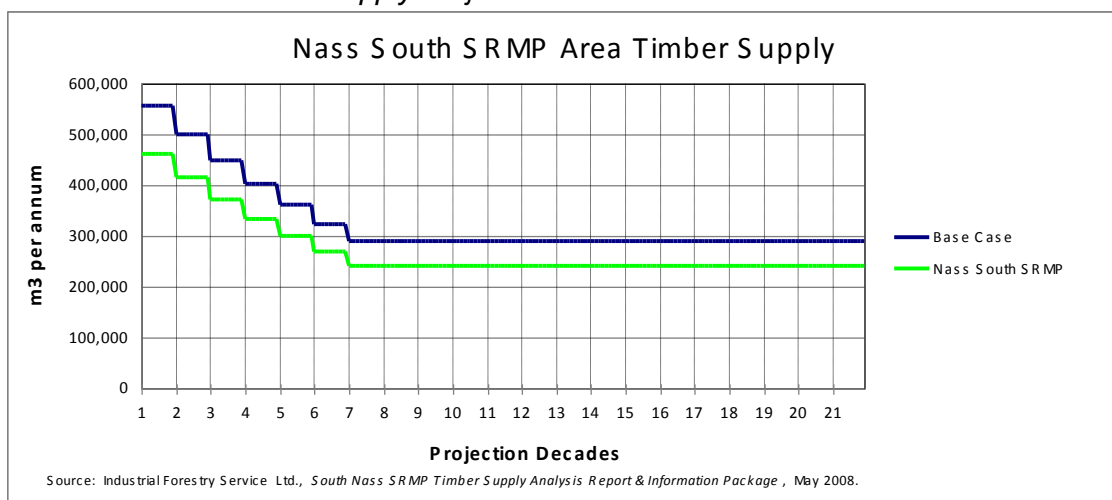
Nass TSA Long Term Harvest: BC MOF, *Nass Timber Supply Area Analysis Report*, June 2001, pages 25 and 26.

AAC for Nass TSA: MOFR Apportionment System, Nass TSA, obtained from web site on February 01, 2007.

As shown on the table, the Nass South SRMP is projected to have the following timber supply impacts:

- short-term timber supply decline of 94,657 m³ or 17%, from 557,400 m³/year in the Base Case, to 462,735 m³/year, which represents a 14.2% decline when applied to the entire Nass TSA); and
- long term timber supply decline of 49,250 m³ per year or 17% from 290,200 m³/year in the Base Case, to 240,974 m³/year, which represents a 12.1% decline when applied to the entire Nass TSA.

Chart 11 Timber Supply Projections for the Nass South SRMP Area



2.2.12 Nass South SRMP Impacts on Timber Harvesting Costs

The timber supply analysis described in the preceding paragraphs examines only the potential timber supply **volume** impacts resulting from timber harvesting land base exclusions and restrictive harvesting intensity in some areas as directed by the Nass South SRMP. Timber harvesting licensees participating in the Nass South planning process have indicated that there may also be harvesting **cost** implications associated with some of the Nass South SRMP management direction as follows:

- Any management direction that leads to less intensive harvesting of an area where roads and other infrastructure must be developed or reactivated, can lead to capital costs that must be amortized over a lower harvest volume, and hence higher costs per cubic metre harvested.
- Management direction can lead to direct cost increases such as requirements for increased consultation, access control measures, watershed assessment requirements, seasonal restrictions on industrial activities, etc.
- Management direction that restricts or prohibits industrial timber harvesting in specific areas (Hanna-Tintina, FEN hydriparian zones, moose winter range) may have a disproportionate

impact on the best timber harvesting opportunities, in terms of standing timber quality, accessibility and required harvesting techniques. In difficult market conditions this may further limit short term economic operability.

No assessment of the existence or potential extent of these costs has been undertaken.

As has been previously documented, Nass TSA timber harvesting operates at the margins of economic feasibility. Any harvesting cost increases could lead to operability implications, given the marginal economic feasibility of harvesting on much of the current THLB. Given that stumpage rates in this area are currently already at or near the minimum for much of the volume harvested, any harvesting cost increases would likely lead to a contraction in the economically operable timber harvesting land base, relative to base case management at any given point in the timber market cycle.

2.2.13 Nass South SRMP Impacts on Forest Employment and Net Economic Value

In management units where the full AAC is generally being harvested, the standard methodology to determine economic impacts of changes in timber supply is to apply employment and revenue coefficients per unit of timber harvested, to the nominal reduction in timber supply. This methodology would likely lead to a dramatic over estimate of economic impacts related to timber supply changes in the Nass TSA, at least in the short term.

The timber harvest for the Nass TSA has averaged 164,000 m³ in 2004, 2005 and 2006, and MOFR has reported the 2007 timber harvest at 166,500 m³ or approximately 25% of the AAC for the Lower Nass TSA of 665,000 m³.

Given that only 25% of the AAC for the Nass South SRMP area has been harvested over the past several years, a reduction in timber supply for the Nass South SRMP could result in relatively small, or no short term impacts on provincial employment, government revenues and net economic value. It could be argued that a decline in timber supply will have no impact on actual harvesting activity since timber supply has not been a constraining factor for harvesting activity in recent years. Conversely, it could be argued that harvesting activity may be disproportionately affected by a decline in timber supply, when combined with increased harvesting costs and reduced economic operability as noted in the previous section.

For the purposes of this analysis, we will assume that the decline in timber harvesting activity in the Nass TSA in the **short term (next 1 to 5 years)**, will be proportional to the projected decline in timber supply caused by the Nass South SRMP (i.e. a 14.2% decline in Nass TSA timber supply will lead to a 14.2% decline in Nass TSA timber harvesting activity from current levels). It is further assumed that changes in harvesting activity will have linear and concurrent impacts on economic parameters.

In the **medium term** (towards the end of the first decade of the projection), we consider the possibility that markets (and a more harmonious relationship between timber harvesters and other forest land interests) may allow annual timber harvesting activity to increase to levels closer to the annual timber supply as expressed by the AAC. We then consider what limitations to this potential will be imposed by the Nass South SRMP.

In the **long term** (seventh decade and beyond), as timber supply falls to long run sustainable levels due to the 'falldown' effect, we again consider what limitations to long term harvesting potential will be imposed by the Nass South SRMP.

The results of these short, medium and long term perspectives are demonstrated in the table following.

Table 7 Nass South SRMP Impacts on Employment, Stumpage and Net Economic Value

Measured Impacts - Nass TSA (2008)	Annual Harvest Levels 3 Year Average for Nass TSA		Current Economic Conditions/ Short Term		Medium Term Potential (Harvest Full AAC - Decade 1)			Long Term Potential (Harvest Full AAC - Decade 7)		
					Base Case Potential Jobs & Stumpage	Potential Nass South SRMP Impacts		Base Case Potential Jobs & Stumpage	Potential Nass South SRMP Impacts	
Timber Volume	164,114	m3	-23,360	m3	665,000	94,657	m3	407,000	49,250	m3
Percentage Drop in Timber Supply			-14.23% reduction			14.23% reduction			12.10% reduction	
Direct Employment (PYs)	PYs per 000 m3	PYs								
Nass South SRMP Area	0.12	20	-3	PYs	80	11	PYs	49	6	PYs
Other Primary Impact Area	0.34	56	-8	PYs	226	32	PYs	139	17	PYs
Total Primary Impact Area	0.46	75	-11	PYs	306	44	PYs	187	23	PYs
Other BC	0.20	32	-5	PYs	130	19	PYs	80	10	PYs
Total Direct PYs for BC	0.66	108	-15	PYs	436	62	PYs	267	32	PYs
Indirect and Induced PYs for BC	0.69	113	-16	PYs	460	65	PYs	281	34	PYs
Total Direct, Indirect & Induced for BC	1.35	221	-31	PYs	896	127	PYs	548	66	PYs
Stumpage Net of BCTS Costs	2.00	per m3	-\$46,720	Annual	\$1,330,000	\$189,314	Annual	\$814,000	\$98,500	Annual
Net Economic Value (Incl. Stumpage & Labour Rents)	3.79	per m3	-\$88,531	Annual	\$2,520,225	\$358,732	Annual	\$1,542,454	\$186,648	Annual

Note: More detail is provided in Appendix 1. Does not add due to rounding.

Source:

1. Harvest Flows: Nass South SRMP Timber Supply Impacts: Industrial Forestry Service Ltd., *South Nass SRMP Timber Supply Analysis Report & Information Package*, May 2008.
2. Socio-Economic data: prepared by Pierce Lefebvre Consulting, Appendix 1 provides more detail on the methodology.
3. Stumpage data: based on BC MOFR data. Appendix 1 provides more detail.
4. Net Economic Value is a combination of rents to the resource owner (stumpage), rents to capital and rents to labour. Not included are offsetting negative externalities resulting from timber harvesting impacts on non-timber forest values.

In the short term, assuming that the Nass South SRMP affects all potential harvesting areas and opportunities relatively evenly, the resulting drop in timber harvest of 23,360 m3 (14.2% of current harvest) could result in a loss of 3 PYs of direct employment in the Nass South area, and another 8 PYs of direct employment elsewhere within the primary impact area, likely in the Gitanyow/ Gitxsan communities and in Terrace.

In the medium term, assuming that markets allow annual timber harvesting activity to approach the actual annual timber supply, harvesting levels and resulting economic activity would be nearly four times current levels. The constraint on this future potential imposed by the Nass South SRMP would then represent 94,657 m3 (14.2% of potential harvest), 11 fewer PYs of direct employment in the Nass South SRMP area and another 32 fewer PYs of employment elsewhere in the primary impact area.

TSR-2 projected that the long run sustainable timber supply for the Lower Nass would be reached in Decade 6 at 407,000 m3 per year. According to the timber supply analysis for the Nass South SRMP, the plan would result in a 49,250 m3 decline in the long term timber supply potential (or 12.1% when applied to the Lower Nass AAC). This reduced potential would result in lower employment potential of 6 PYs of direct employment in the Nass South SRMP area and another 17 PYs of direct employment in the primary impact area, mainly in Terrace.

2.2.14 Summary of Nass South SRMP Implications for the Forest Sector

Summary of Nass South SRMP Implications for the Forest Sector

The Nass South SRMP will provide benefits to the forest sector in the form of greater land use certainty, faster approval of forestry plans, support for product certification initiatives, and improved communication lines with First Nations and other forest land users.

The past 4 year average harvest in the Nass TSA of 164,000 m³ is approximately 25% of the current AAC of 665,000 m³ (not including the Upper Nass partition of 200,000 m³). Current harvest levels are constrained primarily by markets for low grade (pulp) logs and hembal sawlogs.

Projected timber supply impacts from the Nass South SRMP indicate a decline in short term timber supply of 94,657 m³ per annum (assuming harvest the full AAC), a 17% decline from the Base Case scenario for the Nass South SRMP area, which implies a 14.2% decline for the Lower Nass TSA area (the Nass South SRMP area contributes approximately 84% of the AAC for the Lower Nass TSA).

Timber supply modelling indicates that in Decade 7, the Long Term Sustainable Harvest (LTSH) in the plan area under Nass South SRMP management would be 49,250 m³ less than the Base Case level of 290,224 m³, a 17% decline in LTSH for the plan area, and a 12.1% decline when applied to the LTSH for the entire Lower Nass of 407,000 m³.

There may be additional impacts from the Nass South SRMP on timber harvesting in the plan area. If the areas being removed from the THLB, or facing more restrictive harvesting management, are concentrated on lands where timber harvesting opportunities are most economically feasible, a disproportionate impact on current activity levels could result. Also, if some of the management objectives result in higher timber harvesting costs, economic operability may be further diminished, leading to lower levels of harvesting activity.

Assuming an impact on current harvesting activity that is proportional to the projected decline in timber supply attributable to Nass South SRMP management direction, in the short term, 3 direct jobs (PYs) would be at risk in the plan area, and another 8 direct jobs (PYs) would be at risk elsewhere in the primary impact area. Including direct jobs at risk elsewhere in BC (mostly due to reduced wood product and pulp and paper manufacturing activity) a total of 15 direct jobs (PYs) may be at risk in the province.

If timber markets were to improve over the next decade to the point where the full Nass TSA AAC could be economically harvested, then the impacts of the reductions in timber supply resulting from the Nass South SRMP may become more significant. The foregone potential harvesting activity could result in up to 11 fewer direct plan area PYs, another 32 fewer direct primary impact area PYs outside the plan area, and a provincial total of 62 fewer direct PYs, than under basecase management. This type of calculation ignores the potential timber harvesting activity benefits derived from reduced friction between harvesting licensees and local communities provided by the SRMP.

The past 3 year average harvest of 164,000 m³ has provided stumpage revenues that are estimated at \$2 per m³, after accounting for BCTS related costs. Following the logic used to estimate employment impacts, the Nass South SRMP may result in a drop in timber harvest of 23,360 m³ in the short term, which would result in a \$46,720 loss in annual stumpage revenues. Assuming the full Nass TSA AAC could be harvested in the medium term, the loss in stumpage revenue resulting from the Nass South SRMP could be \$189,314, and likely significantly higher as market conditions that would allow harvest of the full AAC would likely also result in higher average stumpage rates.

2.3 Mining and Mineral Exploration

2.3.1 Overview of the Mining Sector in the Nass TSA and Surrounding Area

The town of Stewart owes its origins to the early mineral prospectors who came to the area as early as 1898, and the establishment of a small settlement and Deputy Mining Recorder's office in 1903. Mineral exploration and mining have been the economic anchor of Stewart and surrounding area throughout the 20th century with the development, operation and closure of a several mines leading to significant population fluctuations. Premier Mines operated for the longest duration of the mines in the area, first as an underground gold and silver mine between 1918 and 1963, and then as an open-pit mine between 1989 and 1996. The largest scale past producer in the Stewart area was the Granduc underground copper and silver mine, which employed 750 employees and operated between 1971 and 1978, and again between 1981 and 1984.

In 2001, the mining sector in the Nass TSA area accounted for 16% of after-tax income, and 8% of total employment generating some 25 direct jobs, and another 5 local indirect jobs (based on 2001 census, and dependency ratios for the Nass TSA). This includes the mining of metals, industrial minerals including gravel and aggregates, as well as mineral exploration. The dependency data are based on where residents reside rather than where the jobs occur, and therefore the 25 direct jobs in the mining sector in the Nass TSA includes workers who reside in the area but work at mines based outside the Nass TSA area.

More recent income and employment dependency data than the 2001 Census information are not available, but recent activity in the region suggests that employment in the mining sector is now higher than in 2001. While there are no operating mines within the Nass South SRMP area, there are approximately 36 people who work at Eskay Creek (employees and contractors) who reside in Stewart (approximately 10% of the Eskay Creek workforce). Also, increased exploration expenditures in the region have likely led to more residents of Stewart being involved in mining activities. A review of the provincial government Assessment Report Indexing System (ARIS) database shows that mineral exploration expenditures between 2003 and 2005 have averaged \$1.3 million (2006\$) in the Nass TSA, up from approximately \$0.8 million for the 1980 through 2005 average.²³

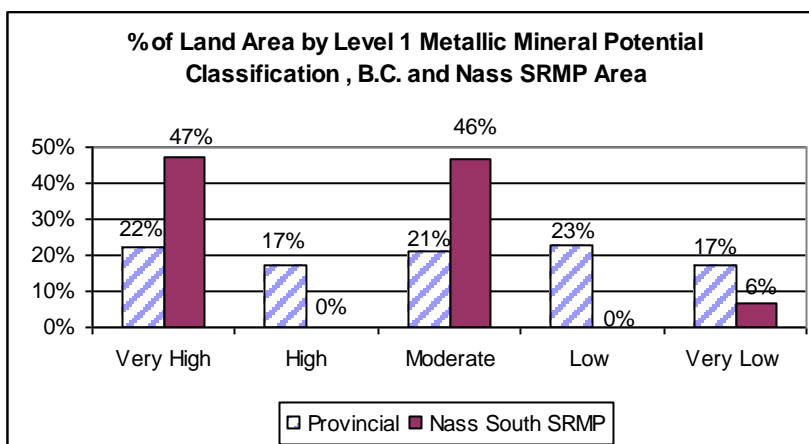
First Nations involvement in the mining industry in the Northwest is relatively high, with 108 jobs being held by members of various Northwest First Nations communities in 2006, up from 61 jobs in 2003.²⁴ In 2006, this represented 9.4% of all non-public sector jobs held by First Nations in the BC Northwest. Residents in Iskut and communities north of Iskut held 76 of the 108 jobs (70%). Residents of First Nations communities near the Nass South SRMP area reported 6 local residents working in the mining sector in 2006 including 1 at Gitsegukla, 1 at Gitwangak (Kitwanga), and 4 in the Nisga'a communities. Another 26 jobs were held by Gitksan-Wet'suwet'en people residing in other Northwest communities including Gitanmaax, Glen Vowell, Hagwilget, Kispiox and Moricetown.

The Nass South SRMP area has provincially significant metallic mineral potential, particularly along the Portland Canal, within a 50 km to 75 km radius of Stewart. The following chart summarizes the GIS data available from the BC MEMPR on metallic mineral potential for the Nass South SRMP relative to BC.

²³ BC MEMPR web site, ARIS database. Appendix 2 provides more data.

²⁴ Source: Skeena Native Development Society, *2006 Labour market Census*.

Chart 12 *Metallic Mineral Potential for the Nass South SRMP Area*



Note: The land area classified as Moderate for the Nass South SRMP area includes one tract ranked #208, which should be classified as Low.

Source:

Nass South SRMP data: MEMPR data as reported by ILMB (BC MAL) GIS data. 2007. Appendix 6 provides more detail.

BC data: Based on BC Ministry of Energy, Mines and Petroleum Resources (BC MEMPR) database as provided by Dorthe Jakobsen, November, 8th, 2005.

The MEMPR data show the following:

- The metallic mineral potential of the tracts near Stewart are ranked as having very high mineral potential, with ranks ranging between 750 and 791, out of 794 under the Level 1 ranking developed by MEMPR. (The tracts are ranked according to the estimated market value per hectare of minerals potentially occurring in each tract, with a higher ranking number indicating higher values per hectare). These tracts include past producers such as the Granduc mine just outside the boundary of the Nass South SRMP area, as well as the Scottie Gold and Summit Lake gold mines just north of Stewart within the boundaries of the Nass South SRMP area, and approximately 40 very small past producing mines of less than 5,000 tonnes.
- In terms of metallic mineral potential, the tracts located east of Meziadin Lake to the eastern boundary of the Nass South SRMP are ranked either moderate, low or very low.
- The mineral tenure data follow the same patterns as the metallic mineral potential data. The MEMPR GIS data show that the area ranked very high in terms of metallic mineral potential is almost entirely covered by mineral tenures. This includes a band approximately 20 km wide along the western boundary of the asserted Gitanyow Traditional Territory.
- The industrial mineral potential for the area is ranked as either low (80% of the landbase) or moderate (20% of the landbase). The Nass South SRMP area has no industrial mineral tracts that are ranked as having high potential. The tracts, which are ranked as having moderate potential for industrial minerals, are located directly south of Stewart.

The BC MEMPR Minfile databases provide a list of operating mines, major development projects and major exploration projects currently active in BC for 2007.

There are currently no operating metal mines in the Nass South SRMP area, but there are two operating mines that have an impact on Stewart, and communities near the Nass South SRMP area. These are:

- **Eskay Creek** (located approximately 100 km northwest of Stewart by air), an underground gold and silver mine which is nearing the end of its reserve life and expects to close in 2008; 368 people work at Eskay Creek (employees and contractors), of which an estimated 36 people reside in Stewart; and
- **Huckleberry Mine** (located approximately 300 km southeast of Stewart by air), an open pit copper and molybdenum mine that is now expected to close in 2010; approximately 280 people work at the mine including contractors, but only a few reside in the Nass South SRMP area.

The town of Stewart, within the Nass South SRMP area, is impacted by those two mines, particularly since both mines ship concentrate out of the port of Stewart. (Huckleberry trucks copper concentrate to Stewart for shipment to Japan, but trucks molybdenum concentrate to Vancouver).²⁵

There are various mining projects currently being considered near the Nass South SRMP area that will likely continue, and potentially increase mineral sector activity in the years ahead.

- **Galore Creek** is a proposed open pit copper-gold-silver mine some 150 km northwest of Stewart by air, and 500 km by road. The project has received all required environmental approvals, and with a May 2007 joint-venture agreement between NovaGold Resources and industry giant Teck Cominco to develop the mine, the likelihood of this project proceeding has increased. It is expected that some 60 construction workers (out of 1,000 total project PYs), and some 100 operations workers (out of 706 PYs of mine employees and contractors) will reside in Stewart.
- **Red Chris**, a proposed open pit copper-gold mine 20 km south of Iskut, or 240 km north of Meziadin Junction by road has also received environmental approvals, and could open as early as 2010 if construction commenced immediately.
- **Swamp Point Aggregate** mine, located 50 km south of Stewart is expected to create between 20 and 50 direct full-time jobs in the region when in full operation. Ascot Resources Ltd. announced the first shipments of aggregate by barge from Swamp Point to Prince Rupert on April 30, 2007.²⁶ These first shipments are destined to the container port development in Prince Rupert, but ultimately, Ascot anticipates serving markets as far south as California.

There are other Northwest BC projects for which the Environmental Assessment process has been initiated, but where the EAO approvals are likely at least one or two years away. These include:

- Mount Klappan, a proposed open-pit coal mine approximately 425 km northeast of Stewart.
- Bear River Gravel Project, a proposed aggregate mine immediately adjacent to the town of Stewart. This project would extract gravel from the Bear River at the confluence of the Portland Canal, and help reduce flood risks for the community of Stewart. The project would generate 100 PYs of direct employment during construction and approximately 40 permanent

²⁵ BC MEMPR, *Exploration and Mining in BC 2006 – Northwest Region*, page 30.

²⁶ Ascot Resources Ltd., 2007, *News Release – Swamp Point Barge Shipments to Fairview Container Terminals*, April 30th, 2007, www.ascotresources.ca (accessed June 1st, 2007).

positions during operations.²⁷

More detail on current and proposed mineral development projects in and near the Nass South SRMP area is presented in Appendix 2.

Within the Nass South SRMP area, mineral exploration has been concentrated near Stewart. Some of the major exploration projects reported by the BC MEMPR are presented in the following table:

Table 8 Selected Exploration Projects in Nass South SRMP

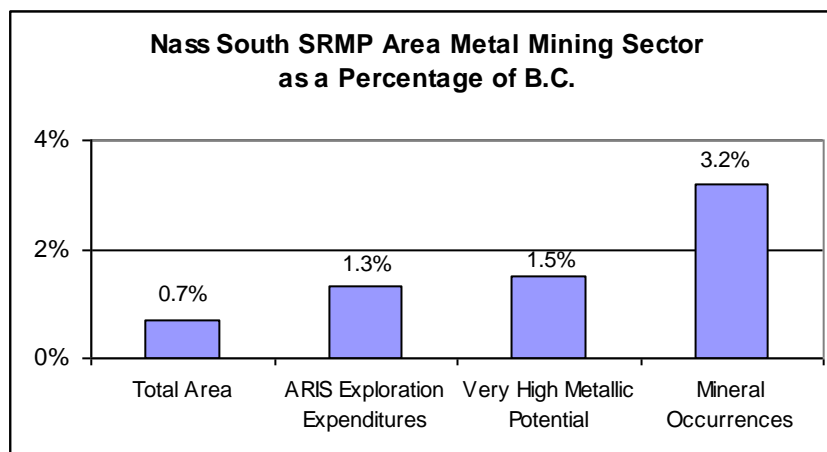
Selected Exploration Projects in Nass South SRMP		
North of Stewart:		
Granduc - Bell Resources Corporation	Past producer	copper
Summit Lake - Tenajon Resources Corporation	Past producer	gold
Electrum deposit - American Creek Resources Ltd.	Past producer	gold
Silver Coin/ Bute property - Pinnacle Mines Ltd. (24 km north of Stewart)	Past producer	gold & silver
Pinnacle Mines Ltd. and Mountain Boy Minerals Ltd. - FR Claim (30 km from Stewart)		lead-zinc-silver
Goldeye Explorations Ltd. and Polar Exploration Ltd. - Todd Creek		gold
Lateegra Resources Corp. and Cypress Development Corp - Poly Claim (42 km NE of Stewart)		gold & silver
Southeast of Stewart		
Sabina Silver Corporation - Del Norte property (34 km east of Stewart)		gold & silver
Homestake Ridge - Bravo Venture Group Inc.(35 km SE of Stewart)		gold & silver
Tonga property - Teuton Resources		gold & silver

Source: BC MEMPR, *Exploration and Mining in BC 2006 – Northwest Region*, page 30.

In summary, the metallic mineral potential in the Nass South SRMP area and mineral exploration is, in general, higher than average for BC. While the Nass South SRMP area has approximately 0.7% of the BC landbase, it is the target of 1.3% of ARIS exploration expenditures, has 1.5% of the very high mineral potential, and has 3.2% of BC's mineral occurrences. While the metallic mineral potential is higher than average for BC, the potential for industrial minerals is lower than the BC average.

²⁷ Cambria Gordon Ltd., 2006, *Bear River Gravel Project – Glacier Aggregates Inc.*, submitted to the British Columbia Environmental Assessment Office, .

Chart 13 Selected Indicators of Nass South SRMP Mineral Potential as a % of BC



Notes:

1. Assessment Report Indexing System (ARIS) mineral exploration expenditures are reported by the BC MEMPR, and have represented about half of total estimated mineral exploration expenditures in BC in recent years. Appendix 2 provides more detail on the ARIS data.
2. The very high metallic potential and mineral occurrence data for the Nass South SRMP area and for BC are based on the MEMPR GIS data. Appendix 2 provides more detail.

Source: Prepared by Pierce Lefebvre Consulting based on BC MEMPR data. Appendix 2 provides more detail.

2.3.2 Base Case and Nass South SRMP Management Regime

In 2002, the B.C. Government legislated a two-zone system for mining along with a “single window” permitting process for exploration and development of mineral resources.

- Mineral exploration and mining are prohibited in all protected areas, parks and ecological reserves.
- Elsewhere, mineral exploration and mining development is permitted subject to various provincial rules and regulations (e.g. *Mines Act* (including Health, Safety and Reclamation Code and the Mineral Exploration Code (MEC)), the *Environmental Assessment Act* and the *Forest and Range Practices Act*). Under these regulations, the mining industry is required to follow strict rules before development can proceed. Under the *Environmental Assessment Act*, large scale development projects such as a metal or industrial mine must assess the environmental, social, economic, cultural and heritage impacts of a project. Depending on the complexity of the issues, the length of the Environmental Assessment process ranges between 12 and 30 months, or longer if a public hearing is required.²⁸

The Nass South SRMP does not establish management objectives specific to the mining sector, other than affirming support for the two-zone system. The only differences between the Base Case management objectives and the Nass South SRMP therefore pertain to an increase in the amount of protected area that would be inaccessible to industrial mining.

Under Base Case management (i.e. without the Nass SRMP), some 5,203 hectares (or 0.8% of the plan area) are in protected areas (PAs) or ecological reserves. Mining and mineral exploration is permitted on more than 99.2% of the Nass South SRMP area lands, subject to the

²⁸ Glenn E. Bridges & Associates and Fluor Daniel Wright Ltd., *Metal Mining – Building Block Profile*, prepared for MSRM and MEM, 2002, 22 pages.

codes and regulations noted above. Under the Nass South SRMP, existing and proposed PAs represent 29,465 ha, or 4.5% of the landbase.

The Base Case management regime identifies areas where visual quality objectives (VQOs) place restrictions on timber harvesting activity, which could potentially affect the mining sector as well. These same VQOs apply to the Nass South SRMP. Environmental assessment for mine development approval processes can consider and act on visual sensitivity information.

Under the Base Case management regime, the mining industry is required to consult with stakeholders, including the recreation and tourism sectors before proceeding with development. These requirements are not affected by the Nass South SRMP. In January 2004, the B.C. & Yukon Chamber of Mines, the Council of Tourism Associations of B.C. and the Mining Association of B.C. signed a Memorandum of Understanding endorsing the Two-Zone system and setting some ground rules for resolving conflicts between tenure holders in the tourism sector and in the mining sector.²⁹

In general, the potential for acid mine drainage to affect environmental values, and the potential for the boom/bust nature of mine development to affect social values, have been major concerns of local residents in the BC Northwest region.³⁰

2.3.3 Likely Impacts of Nass South SRMP on the Mining Sector

The following table shows how indicators of mineral values in the Nass South SRMP area are distributed across the proposed Nass South SRMP resource management zones.

Table 9 Impact of Nass South SRMP on Mining Values

Nass South SRMP GIS Data	Total	Units	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina Protected Area	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas	Total
Total Area	662,509	ha	0.2%	0.0%	0.8%	3.7%	5.0%	3.5%	86.7%	100%
Metallic Mineral Potential										
High	311,930	ha	0.3%	0.1%	0.2%		2.6%	0.7%	96.1%	100%
Moderate	307,408	ha	0.1%	0.0%	1.5%	7.9%	6.7%	6.3%	77.5%	100%
Low	42,627	ha					11.2%	5.0%	83.8%	100%
Industrial Mineral Potential										
High	207	ha							100.0%	100%
Moderate	135,113	ha	0.3%	0.0%	0.2%	18.0%	3.8%	3.7%	74.0%	100%
Low	526,644	ha	0.2%	0.0%	0.9%		5.4%	3.5%	90.0%	100%
Mineral Tenures	323,472	ha	0.3%	0.0%	0.1%	0.4%	2.6%	0.5%	96.0%	100%
ARIS										
Assessment Report Sites	508	Sites	0.8%				4.7%	0.2%	94.3%	100%
Expenditures (\$)	30,647,421	Sites	1.2%				1.8%	0.0%	97.0%	100%
Metallic Mineral Occurrences										
Developed Prospect	12	Sites							100.0%	100%
Past Producer	41	Sites	4.9%				12.2%		82.9%	100%
Producer	0	Sites								
Prospect	58	Sites	3.4%				10.3%		86.2%	100%
Showing	210	Sites	1.0%				5.7%	1.0%	92.4%	100%
Total Occurrences	321	Sites	1.9%				7.2%	0.6%	90.3%	100%
Gas Potential	348,065	Sites	0.1%	0.0%	1.3%	7.0%	7.4%	6.1%	78.1%	100%

²⁹ B.C. & Yukon Chamber of Mines, Council of Tourism Associations of B.C. and Mining Association of B.C., *Memorandum of Understanding*, January 22, 2004, 8 pages.

³⁰ See for example Official Report of DEBATES OF THE LEGISLATIVE ASSEMBLY (Hansard) Wednesday, June 30, 1982, Morning Sitting p. 8,537.

The proposed Hanna-Tintina protected area is located on lands having Moderate potential for both metallic mineral and industrial mineral discoveries, according to the MEMPR Level 1 mineral tract ranking system. There are no recorded metallic mineral occurrences in the proposed protected area, and no exploration expenditures recorded in the ARIS database.

Under the Nass South SRMP, development of mineral resources in the Hanna-Tintina area would not be permitted. Some recently established mineral tenures overlap the proposed Hanna-Tintina protected area by a total of 1,417 hectares. While this represents only 0.4% of total mineral tenures in the area, development in those mineral tenures would not be permitted under the Nass South SRMP.

Summary of Nass South SRMP Impacts on the Mining Sector

- The proposed Hanna-Tintina PA increases total PAs from 0.8% of the landbase under the Base Case to 4.5% of the total landbase; the balance, or 95.5% of the plan area remains accessible to mining.
- In the proposed Hanna-Tintina, there are no recorded metallic mineral occurrences and no exploration expenditures recorded in the MEM ARIS database.
- Some recently acquired mineral tenures overlap the proposed Hanna-Tintina PA by 1,417 hectares, and development in those mineral tenures would not be permitted under the Nass South SRMP.

2.4 Energy Sector

The Nass South SRMP area has no known coal deposits, coal leases or coal applications. The Nass South SRMP area does have some potential for oil and gas energy production and for hydro-electric generation.

2.4.1 Oil and Gas

There has been no significant oil and gas exploration in the Nass South SRMP area. Approximately half of the Nass South SRMP area is within the Bowser Basin, and is characterized as having between 20,001 m³ and 40,000 m³ of potential gas reserves per hectare, which may be classified as having moderate potential.³¹ There are nearby areas within the Bowser Basin that show greater oil and gas potential than the Nass South SRMP area. For example, the area near Kispiox and Hazelton show potential gas reserves of between 40,000 and 100,000 m³ per hectare.

The following table shows that the proposed Hanna-Tintina PA is entirely within the Bowser Basin gas potential area, and as a result some 7% of the plan area's moderate gas potential lands would be unavailable for commercial development.

³¹ Based on a review of map of Bowser Basin, MEMPR.

Table 10 Areas with Gas Potential in Nass South SRMP Plan Area

Nass South SRMP GIS Data - June 6, 2008	Total Area	Total Area (%)	Bowser Basin Gas Potential	
	hectares	%	hectares	%
Private Lands	1,564	0.2%	314	0.1%
Federal Lands and I.R.	271	0.0%	82	0.0%
Existing Parks and Protected Areas	5,203	0.8%	4,622	1.3%
Hanna Tintina Protected Area	24,262	3.7%	24,262	7.0%
OGMAs	33,337	5.0%	25,792	7.4%
FEN Zones (Excluding OGMA or PA areas)	23,502	3.5%	21,217	6.1%
Sub-Total - Special Management Areas	88,139	13.3%	76,289	21.9%
General Mgmt Areas	574,371	86.7%	271,776	78.1%
Total	662,509	100%	348,065	100%
% of Total Plan Area			52.5%	

2.4.2 Hydro-Electric Projects

As in most areas of BC, the Nass South SRMP area has creeks and rivers which may be suitable for small hydro-electric generation projects. BC Hydro and Cartographics Ltd. have developed maps of BC that classify BC's small hydro potential into three categories namely, low, medium and high. The Nass South SRMP area is classified as having moderate small hydro potential. As noted on the map, "all sites are potential sites only and may prove not feasible upon further investigation."³² One of the issues affecting viability of small hydro sites is their proximity to the main power grid. In the Nass South SRMP area, the main power grid is accessible along Highway 37 to Meziadin Junction, and along Highway 37A to Stewart.

The BC Transmission Corporation (BCTC) has developed a proposal to extend power transmission in northwest BC through the development of a 335 km long 287 kV transmission line from Terrace to Bob Quinn Lake. The line would require upgrading the Skeena Substation near Terrace, and building the Bob Quinn Substation at the northern terminus. The potential benefits would include better service to the BC northwest communities and local industry, as well as secure grid connection to potential independent power producers.³³ The mining industry has been lobbying government to fund this project as it would help service some of the proposed mines north of Stewart.³⁴

The proposed route of the Northwest Transmission Line runs parallel to Highway 37 through the proposed Hanna-Tintina protected area. The Nass South SRMP recommends that a corridor be established through the Hanna-Tintina protected area specifically to accommodate this transmission line.

2.5 Non-Timber Forest Products

Harvesting wild mushrooms, and in particular pine mushrooms, is the primary non-timber forest

³² BC Hydro and Canadian Cartographics Ltd., Small Hydro Map, <http://www.canmap.com/small.htm>.

³³ BC Transmission Corporation, *Northwest Transmission Line (NTL) Project Terrace to Bob Quinn Lake Project Description*, Submitted to BC Environmental Assessment Office and Canadian Environmental Assessment Agency, 2007.

³⁴ The Mining Industry Advisory Committee (IAC), *Recommendations to the Government of BC Regarding Private and Public Sector Actions to Improve the Global Competitiveness of the BC Mining Industry*

products harvesting activity carried out on a commercial basis in the Nass South SRMP area. There are other non-timber forest products in the Nass South SRMP area but they are not harvested commercially at this point. These include various types of berries, as well as medicinal and other forest plants.

2.5.1 Overview of Pine Mushroom Harvesting

Wild mushroom harvesting in BC includes a variety of species and represents a multi-million dollar industry. Chanterelles, boletes and morels are exported mainly to Europe, whereas pine mushrooms, also known as matsutake, are exported mainly to Japan.

While several mushroom species are harvested in the BC northwest, notably chanterelle harvesting on Haida Gwaii/ Queen Charlotte Islands (HG/QCI)³⁵, pine mushrooms are the mainstay of commercial mushroom harvesting in the Nass South SRMP area. Pine mushroom habitat occurs in specific forest types that are between 75 and 200 years old.

The pine mushroom industry reached a peak in activity in the early 1990s, but it has since slowed down considerably, mainly the result of a downturn in the Japanese economy, increased competition from other countries and a higher Canadian dollar. In 1993, the Terrace and Nass River area accounted for 110,000 kg, or 88% of the total BC production of pine mushrooms of 125,000 kg, although buyers noted that 1993 was generally a bad harvest year for pine mushrooms except around Terrace and the Nass Valley. A 1994 study of the Skeena-Bulkley pine mushroom harvesting region estimated that 60% of the pine mushroom harvest from BC originates from the BC Northwest, or an estimated 150,000 kg, and generated 28,800 person days of employment, or work for approximately 850 pickers.³⁶ The pine mushroom harvesting season typically lasts from August to October. More detail on the above estimates is presented in Appendix 3.

The largest BC Northwest pine mushroom harvesting sites are the Nass River Valley (Kalum District), which includes mushroom harvesting on Nisga'a Lands as well as harvesting in the Nass South SRMP area, and the Hazelton-Kispiox Valley (Kispiox District). Every year, there are settlements and informal campsites that develop to house out of town pickers. One of the most well known is at Cranberry Junction just south of the boundary to the Nass South SRMP area. The Zoo, as it is often referred to, has reached up to 250 residents during the picking season.³⁷

In 2000, the Gitanyow Hereditary Chiefs commissioned a study of pine mushroom harvest productivity in Gitanyow Traditional Territories. The study conducted a harvest survey of a very small site containing 1,791.3 hectares of which 749.3 ha consist of mushroom habitat. Over a 4 week period, some 305 pickers harvested 389.3 kg of pine mushroom. Of these 305 pickers, half were from the villages of Gitanyow and Kitwanga, 25% were from other Northern Interior communities and the balance were from elsewhere in B.C. and Canada. Some 57% of pickers

³⁵ Haida Gwaii/Queen Charlotte Islands for example, is considered one of the best areas in the province for chanterelle mushroom harvesting, with annual production averaging 115,000 Kg (ranges between 70,000 kg in a poor year to 160,000 kg in an exceptional year). Source: Tedder, Sinclair et al., *Seeing the Forest Beneath the Trees: The Social and Economic Potential of Non-Timber Forest Products and Services in the Queen Charlotte Islands/Haida Gwaii*, page ii.

³⁶ Meyer Resources, *A Preliminary Analysis of the 1994 Pine Mushroom Industry of the Nass Valley Area*, as reported in: Gamiet, Sharmin et al., *An Overview of Pine Mushrooms in the Skeena-Bulkley Region*, 1998, page 2.

³⁷ de Leeuw, Sarah, "Community 'Shroom Season at the Zoo", published in Northwest BC Connections, not dated, Matsiman.com.

considered themselves to be commercial pickers and 43% indicated they were recreational pickers.³⁸

As detailed in the Nisga'a Final Agreement 2004-2005 Annual Report, since the 2000 Nisga'a treaty settlement, pine mushroom harvesting on Nisga'a Lands is monitored through the sale of permits to Nisga'a and non-Nisga'a pine mushroom harvesters.

In 2003, some 415 permits were issued, with Nisga'a citizens holding approximately 60% of those permits. In 2003, some 45,360 kg of pine mushrooms were harvested on Nisga'a Lands, but harvest volumes dropped to 8,210 kg by 2005. Nisga'a fees and administrative charges include fees to harvesters of \$25 for Nisga'a citizens and \$75 for non-Nisga'a citizens, as well as a \$250 fee per buyer and \$1 per pound for mushrooms graded 1,2 and 3, and between \$0.10 and \$0.25 per pound for the lower grades.

Table 11 Pine Mushroom Harvest from Nisga'a Lands

Year	\$ to Harvesters (\$ million)	Weight Harvested (Kg)	\$ per Kg	\$ per Kg (2007\$)	Number of Permits Issued
2000	\$0.40	13,620	\$29.37	\$34.19	
2001	\$1.30	27,216	\$47.77	\$54.21	
2002	\$1.00	23,000	\$43.48	\$48.22	451
2003	\$1.00	45,360	\$22.05	\$23.72	415
2004	\$0.15	12,000	\$12.50	\$13.16	
2005	\$0.18	8,210	\$21.92	\$22.49	
Average	\$0.67	21,568	\$29.51	\$32.66	

Source:

Nisga'a Lisims Government, Nisga'a Final Agreement 2004-2005 Annual Report, page 20.

Nisga'a Lisims Government, Nisga'a Final Agreement 2006-2007 March 23, 2007 Draft.

Nisga'a Lisims Government Legislative Chambers, NLG Executive Meeting Summary and Highlights, June 22nd, 23rd, 2004.

In a good year, there may be approximately 40,000 kg of pine mushrooms harvested from the Nass South SRMP area. The net economic value from that harvest is estimated at approximately \$150,000 per year, based on gross industry revenues of approximately \$1.8 million (Appendix 3 provides more detail). Of these revenues, approximately \$1.3 million might accrue to harvesters, which assuming earnings of \$2,600 per year would translate into 500 pickers, or approximately 50 person years of employment.

It is difficult to validate the production estimate of 40,000 kg of pine mushroom harvesting per year as there are no reliable statistics available. The Gitanyow study on pine mushroom productivity in Gitanyow Traditional Territory estimated that over a 4 week period, productivity was 0.39 kg of mushrooms per hectare of mushroom habitat in the study area, and 1.42 kg of mushrooms per hectare at sites of intense activity within that mushroom habitat area. Other studies, notably a 1999 study for the Cranberry Timber Supply Area estimates yields of 3.5 kg per hectare per year.³⁹ The Nass South SRMP area contains 17,571 hectares of identified pine mushroom habitat. Assuming an annual yield from these areas ranging between 1.42 kg per hectare and 3.5 kg per hectare, the total pine mushroom production in the plan area may range between 25,000 kg and 60,000 kg per year. Whether that production rate is achieved in any

³⁸ Bravi, Rebecca S., and Allen Gottesfeld, *Fall 2000 Pine Mushroom Harvest Productivity and Inventory Study, Gitanyow Traditional Territories*, prepared for Gitanyow Hereditary Chiefs, 22 pages.

³⁹ Forest Modelling Consultants, *Pine Mushrooms and Timber Production in the Cranberry Timber Supply Area*, 1999, pages 5 and 6.

given year will depend on access to mushroom habitat areas and market conditions.

The harvest and net economic value related to pine mushrooms was probably much lower than the above estimates in the last four to five years due to very low average prices. Appendix 3 provides more detail on the estimated Net Economic Value that may be associated with pine mushroom harvesting in the Nass South SRMP area.

2.5.2 Management Objectives for Pine Mushroom Harvesting

There is no specific base case management direction to protect or preserve pine mushroom habitat in the Nass TSA. In the Nass TSA TSR2 review, however, the Chief Forester notes, “where possible, wildlife tree patches are strategically placed or cut-block boundaries are revised to conserve pine mushroom habitat.”⁴⁰ Also, he notes that MOFR staff members are exploring options other than clearcutting in an attempt to manage for pine mushroom habitat.

As part of TSR-2, MOFR mapped some 5,250 hectares as prime mushroom habitat on the THLB, and conducted some sensitivity analysis on the impact of increasing the minimum harvestable age to 200 years. According to MOFR, this resulted in a decrease of 3,000 cubic metres in the base case long-term annual timber supply level.⁴¹

The Nass South SRMP expresses a goal to maintain pine mushroom resources and provide opportunities for a sustainable harvest. A specific target of maintaining forest stands on at least 50% of productive pine mushroom sites in an age range of 80 to 200 years, combined with best efforts to identify and map productive pine mushroom sites, is expected to contribute significantly to maintaining the resource base. Also, the Nass South SRMP has led to the preliminary identification of mushroom harvesting management areas that cover some 17,571 hectares.

2.5.3 Nass South SRMP Impacts on Pine Mushroom Harvesting

Formalizing management for pine mushroom habitat provides greater confidence in the long term sustainability of the resource. The GIS data in the following table shows the distribution of currently identified pine mushroom management areas across the resource management zones proposed by the Nass South SRMP. Of the 17,571 hectares of pine mushroom management area, 2,206 hectares (or 12.6%) would be located in areas where commercial timber harvesting is not permitted (Hanna-Tintina protected area, OGMAs, and FEN hydrosiparian areas), leaving 15,365 hectares (or 87.4%) in general management areas.

While no harvesting areas may preserve pine mushroom habitat in the short term, over the longer term productivity may fall in old growth areas as forest stands mover beyond 200 years of age.

⁴⁰ BC MOFR, *AAC Rationale for Nass TSA Effective August 1st, 2002*, page 27.

⁴¹ *Ibid*, page 28.

Table 12 Pine Mushroom Harvesting/ Management Areas for Nass South Plan Area

Nass South SRMP GIS Data	Total Area		Pine Mushroom Harvesting/ Management Areas	
	Hectares	%	Hectares	%
Private Lands	1,564	0.2%		
Federal Lands and I.R.	271	0.0%		
Existing Parks and Protected Areas	5,203	0.8%		
Hanna Tintina Protected Area	24,262	3.7%	89	0.5%
OGMAs	33,337	5.0%	1,563	8.9%
FEN Zones (Excluding OGMA or PA areas)	23,502	3.5%	554	3.2%
Sub-Total - Special Management Areas	88,139	13.3%	2,206	12.6%
General Management Areas	574,371	86.7%	15,365	87.4%
Total	662,509	100%	17,571	100%

Summary of Nass South SRMP Impacts on the Pine Mushroom Harvesting Sector

- Pine mushrooms are harvested commercially in the Nass South SRMP area, generating an estimated 40,000 kg of pine mushrooms worth approximately \$1.8 million in a good year and \$150,000 in net economic value. Average prices have been very low in recent years, so these estimates likely represent an upper bound of the range of value of the industry.
- The Nass South SRMP should benefit the pine mushroom harvesting industry through specific management of 17,571 hectares of pine mushroom habitat.
- In addition, under the Nass South SRMP area, some 12.6% of pine mushroom harvesting management areas would be in areas where timber harvesting is not permitted.

2.6 Agriculture, Trapping and Commercial Fishing

2.6.1 Agriculture

There are no lands which are part of the Agriculture Land Reserve (ALR) in the Nass South SRMP area, and very few or no jobs related to the agriculture sector.

2.6.2 Trapping

There are traplines in the Nass South SRMP area, but data on harvesting are not readily available. BC Stats reports no employment in the trapping sector for the Nass South SRMP area.⁴² Gitanyow traplines are believed to be extensive and active in the area.

The Nass South SRMP recommends that all existing tenures in the proposed Hanna-Tintina PA will be grand-fathered, specifically indicating that trapping, guiding and commercial recreation will be considered acceptable uses, and that tenures are to be eligible for transfer.⁴³

2.6.3 Commercial Fishing

BC Stats reports no employment in the commercial fishing sector for the Nass South SRMP

⁴² BC Stats, 2003 BC Community Dependency Model, based on 2001 Census information, Nass LRMP Area.

⁴³ Nass South SRMP, pages 74 & 75.

area.⁴⁴ Commercial fishing is however, very important to communities surrounding the Nass South SRMP area. BC Stats reports that in 2001 (the latest year available), commercial fishing and trapping accounted for 98 direct jobs in the Kispiox area (4% of basic employment), 165 direct jobs in Kalum South (1% of basic employment), and 16 jobs in Cassiar Iskut-Stikine (8% of basic employment).

Commercial fishing is particularly important to First Nations in the area, quite aside from the profound cultural and sustenance significance of the salmon fishery. The Skeena Native Development Society reports that in 2006, the commercial fishing sector generated employment for 65 people residing in the Nisga'a villages and 8 people residing in the Gitanyow/Gitxsan villages.⁴⁵

Approximately 6 people from the Gitanyow community are involved in commercial fishing and the Gitanyow harvest approximately 6,000 sockeye, a few hundred chum, and a few hundred coho salmon per year for community use.⁴⁶

The Nisga'a Nation reports the following harvest of salmon from 2000 through 2005/2006. The harvest includes their share of the commercial coastal fishery as well as the communal use fishery, and the commercial river fishery.

Table 13 Volumes and Value of Nisga'a Salmon Fishery

Nisga'a Salmon Fishery	2000	2001	2002	2003	2004	2005
Number of Individual Sales Permits:						
Sales to Nisga'a Citizens	450	800	N/A	371	370	352
Issued Free of Charge to Nisga'a Citizens	N/A	N/A	N/A	66	67	63
Salmon Harvest (Individual Fish Caught):						
Sockeye	54,734	37,833	87,918	85,284	91,426	112,778
Coho	n/a	n/a	2,425	10,317	10,294	14,762
Total	54,734	37,833	90,343	95,601	101,720	127,540
Revenue to Local Nisga'a Economy from Sockeye	\$900,000	\$386,126	\$833,781	\$984,708	\$1,141,930	\$665,556

Note: Individual sales permits allow any Nisga'a citizen to catch up to 500 sockeye and a communal allocation.

Source: Nisga'a Final Agreement - Annual Report, Various Years, 2000 to 2005/2006.

The Nass South SRMP area is part of the Nass Watershed, which supports the provincially significant Nass salmon fishery. Within the plan area, Meziadin Lake and its major tributaries, Hanna, Tintina and Surprise Creeks, account for up to 80% of the total Nass sockeye assessment. The other main sockeye producers for the Nass fishery are located outside the Nass South SRMP area and include the Bowser, Damdochax and Fred Wright/ Kwinageese Lake systems.⁴⁷ DFO divides Nass chinook stocks into three units, the Nass River Interior, Lower Nass River and coastal stocks.⁴⁸ The Nass salmon fishery is primarily fished commercially in coastal waters. The Nisga'a commercial salmon harvest in coastal water represents only a portion of the total allowable catch from the Nass River.

⁴⁴ BC Stats, 2003 BC Community Dependency Model, based on 2001 Census information, Nass LRMP Area.

⁴⁵ Skeena Native Development Society, *2006 Labour Market Census*, page 25.

⁴⁶ Glen Williams, Gitanyow Hereditary Chiefs, pers. comm. March 29, 2007.

⁴⁷ Department of Fisheries and Oceans Canada, Pacific Region, *Pacific Wild Salmon Fishery, Nass River Sockeye*, June 2004, page 1.

⁴⁸ Ibid, page 2; also: Gitanyow Fisheries Authority, *Brown Bear Creek Sockeye & Coho Salmon Escapement Estimate – 2005*, April 25, 2006, page 2.

The Nass South SRMP establishes some specific management direction to enhance water quantity and quality as well as protect fish habitat through the protection of riparian areas. Under the SRMP, riparian areas will particularly benefit through the preservation of FEN hydriparian areas, which will see no timber harvesting.

The SRMP also establishes Water Management Units (WMUs) with specific management direction to help protect water quality, quantity and stream flow patterns. These four WMUs are large areas outside the current THLB. They include an area around Mt. Bell Irving (7,970 ha) that partially overlaps the proposed Hanna-Tintina Protected Area, an area around Madely Lake/Kwinageese (12,841 ha), an area surrounding Scrub Lake (6,378 ha) and an area in the Kinskuch watershed (10,675 ha).

2.7 Tourism and Outdoor Recreation

For the purpose of this report, tourism and outdoor recreation are defined as follows:

- the tourism industry is based on spending by non-resident travellers to the area on accommodation and food, activities and transportation (defined in this way, tourism would include business travellers); and
- outdoor recreation is defined as non-commercial outdoor activities enjoyed by residents and non-residents of the area; public recreation does not involve the use of a commercial guide for which a fee is paid.

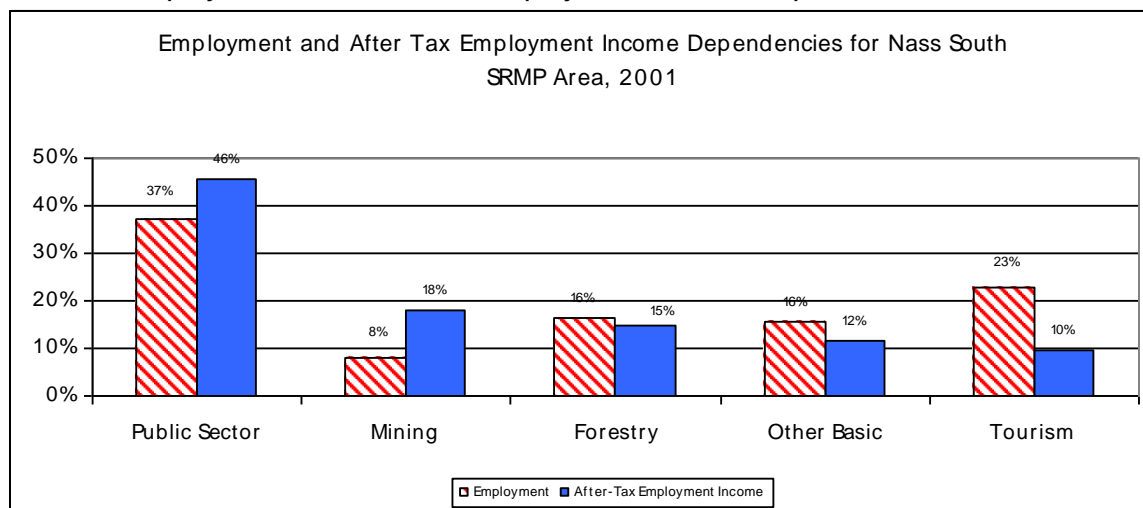
The following sections of the report review the contribution of the Nass South tourism and outdoor recreation sector to the regional economy and the growth potential of that sector. The extent of public recreation activities is also reviewed.

2.7.1 Overview of Nass South SRMP Tourism Sector

BC Stats estimates that in 2001, tourism in the Nass LRMP area (Nass TSA) was the most significant private sector employment generator, accounting for 23% of basic sector employment (87 direct and indirect jobs), although accounting for only 7% of total before-tax basic income. Average after-tax income per direct and indirect job associated with the tourism sector in 2001 was \$10,500 compared to \$22,000 for the forest sector and \$57,000 for the mining sector (the low income per job in the forest and tourism sectors may reflect sporadic or seasonal operations in the Nass TSA; also, undeclared income may be more prevalent in the tourism sector than in the forest or mining sectors).⁴⁹

⁴⁹ BC Stats, 2003 BC Community Dependency Model, based on 2001 Census information, Nass LRMP Area.

Chart 14 *Employment and After-Tax Employment Income Dependencies*



Note: The above data is for the Nass LRMP area, which includes the Nass South SRMP area as well as the northern portions of the Nass TSA. Since Bell II is the only settlement in the Upper Nass, the data for the Nass LRMP area should be representative of the Nass South SRMP area.

Source: Horne, Dr. Garry, BC Stats, 2001 *Economic Dependency Tables for MSRMLRMP Areas, 2004.*

The BC Stats and Canada Census data are based on the occupation and income of local residents at the time of the Canada Census. As a result, the economic dependency data do not reflect the jobs and income generated through hiring individuals who do not reside in the area. Since the Municipality of Stewart is the only significant population centre within the Nass South SRMP boundaries, the sector dependency data is primarily a reflection of Stewart's economic structure.

The next sections provide an overview of front-country tourism activities, as well as some of the key backcountry activities that take place in the Nass South SRMP area.

2.7.2 Front Country Tourism

Front country tourism includes tourism activities that are easily accessible by automobile. Paved road access to the Nass South SRMP area includes:

- Highway 37 which crosses the Nass South SRMP area north-south, linking Cranberry Junction to Meziadin Junction, and to Bell II, approximately 50 km north of the Nass South SRMP boundary (96 km from Meziadin Junction); and
- Highway 37A, which crosses the Nass South SRMP east/west, linking Meziadin Junction with Stewart (approximately 65 km).

Front country tourism depends partly on daily traffic through the region. In winter, there are approximately 125 cars per day that travel on Highway 37A between Stewart and Meziadin Junction, and in summer, approximately 615 vehicles per day travel that same road (based on 2005 data and includes traffic volumes in both directions).⁵⁰ The traffic volumes are similar on Highway 37 north of Meziadin junction.

⁵⁰ Based on BC Ministry of Transportation data for March and August 2005; Appendix 4 provides more data. Website: www.th.gov.bc.ca/trafficData/ was accessed June 14, 2007.

On Highway 37, at the permanent traffic count station north of Kitwanga, and south of the boundary to the Nass SRMP area, traffic volumes are 2 to 3 times higher than near Stewart. Traffic volumes at the Kitwanga station are approximately 1,230 vehicles per day in the summer months, and 650 vehicles per day in the winter months.⁵¹ By comparison, traffic on Highway 16 east of the Kitwanga station is approximately 50% higher than on Highway 37, with approximately 1,850 vehicles per day in the summer months, and 1,050 vehicles per day in the winter months. Appendix 4 provides more data on traffic counts.

There are many activities that attract front country tourism traffic to the region. The following lists some of the more well-known sites and activities:

- **The community of Stewart and the neighbouring community of Hyder in Alaska:** Tourism sites near Stewart/Hyder include Bear Glacier, Fish Creek, various bear viewing areas, and various historic buildings and sites. The community of Stewart/Hyder has numerous lodges, hotels, guest houses, restaurants, campgrounds, gift shops and small businesses that cater to the tourism traffic. The Ripley Creek Inn caters to heli-skiing clients during the winter.
- **Meziadin Lake Provincial Park:** Located at Meziadin Lake, this Provincial Park offers 62 vehicle/tent campsites, a boat launch, fishing, and a picnicking site (inside the Nass South SRMP boundaries).
- **Swan Lake Upper Kispiox River Provincial Park:** Located on the southeastern boundary of the Nass South SRMP area, this wilderness park covers 62,319 hectares (primarily outside the Nass SRMP boundaries). Features include old growth forest, wilderness campsites, and a chain of lakes ideal for a canoe portage trip. There is no boat launch and only electric motors are permitted on Brown Bear Lake and Swan Lake. The main access road is via the Brown Bear Forest Service Road, approximately 50 km south of Meziadin Junction on Highway 37. The park entrance is approximately 17 km from Highway 37. Bear Lake is within the Nass South SRMP area.
- **First Nations village sites and cultural features:** Many of the First Nations communities have extensive displays of history poles (totem poles), some as old as 150 years old, that draw tourists to the communities of Gitanyow, Kispiox, Ksan Village, and the Nisga'a villages; none of these communities are inside the Nass South SRMP boundaries.
- **Nisga'a Memorial Lava Bed Provincial Park:** This historic site has spectacular scenery, 16 vehicle/tent campsites, extensive hiking trails, a boat launch, fishing sites, and picnicking sites; it is located outside the Nass South SRMP area near the Nisga'a community of New Aiyansh.
- **Seven Sisters Peak Provincial Park:** Located near Kitwanga, this large park has extensive hiking trails and snowmobiling areas.

An average of approximately 120 people per day visit the Stewart Visitor Information Centre during the peak period of June, July and August, or approximately 10,000 people throughout the summer (based on 2005 data). The number of visitors has been declining slightly since 1998 when it peaked at 13,331 people. In 2006, the number of visitors dropped by 25%, mainly the

⁵¹ *Ibid.*

result of the Queen of the North ferry sinking, which severely affected tourism throughout the North Coast region. The strength of the Canadian dollar and the increasing cost of fuel may have also negatively affected tourism in the region. Another factor contributing to the decline in visitor centre visits may be the increased opportunity for visitors to obtain information directly from tourism-based businesses. Appendix 4 provides more detail on visitor data.

The Stewart Visitor Information Centre is not open in the winter months. Winter tourism has been growing in importance, mainly as a result of snowmobilers and snowboarders visiting the area between November through June and heli-skiing.

2.7.3 Backcountry Tourism and Recreation

The main backcountry tourism and recreation activities taking place within the Nass South SRMP area include:

- Hunting, including guided hunting and hunting by BC residents;
- Fishing lodges and recreational fishing including guided fishing;
- Heli-skiing; and
- Hiking, wildlife viewing, snowmobiling, ski touring, and other non-guided activities.

This section outlines the main activities in each of these sectors in the Nass South SRMP area.

Guided Hunting

There are two guide-outfitter territories, which are partially within the Nass South SRMP area.⁵²

- Coast Mountain Outfitters (Robert Milligan), based in Terrace; and
- Kispiox Valley Outfitters (Clint Larson), based in Smithers.

Both guide-outfitters offer multiple day packages for hunting moose, black bear, grizzly bear, mountain goat, wolf, and wolverine, and one of the guide-outfitters also offers hunts for mountain caribou and Columbia blacktail deer.⁵³ Each multiple-day package ranges in price between a few thousand dollars up to \$20,000 for a 10 day grizzly bear hunt with two or three secondary animals. These operations cater primarily to an international clientele from the USA and Europe. The main camp for Kispiox Valley Outfitters is located on the Kispiox River outside the Nass South LRMP. Based on a review of the Coast Mountain Outfitters website, their territory covers the southwest portion of the Nass South SRMP area, as well as the area between Stewart and Kitimat, including Terrace.

A guide outfitting territory tenure confers upon the licensee exclusive use of a territory for guided hunting operations (but not for recreation or other commercial uses of the land). The exclusive nature of these tenures, coupled with the requirement that non-resident hunters must use the services of a licensed guide, has generated economic rent that is capitalized in the value of these transferable tenures. Recent sales of these types of tenures in BC have indicated values for the licences in excess of \$1 million (exclusive of hard assets such as lodges, cabins and

⁵² Based on personal communication with George Schultze, BCMOE, March 26th, 2007.

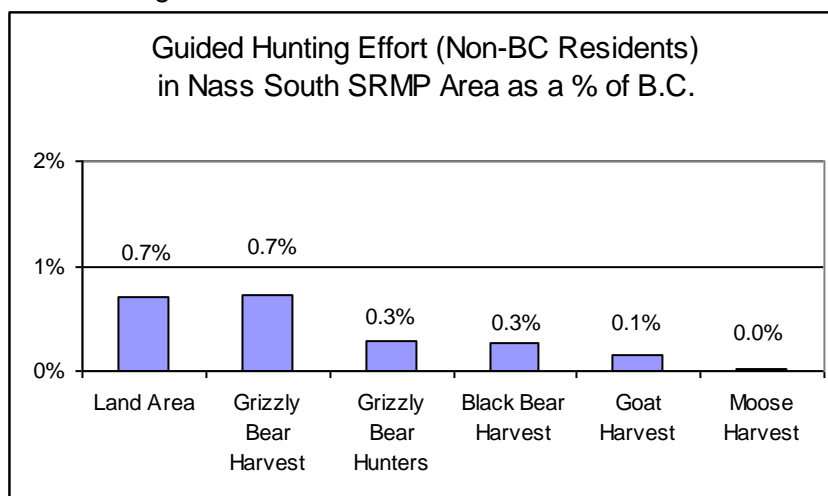
⁵³ As indicated on the web sites for Coast Mountain Outfitters and Kispiox Valley Outfitters.

equipment).⁵⁴

The BC Ministry of Environment (MOE) collects data on hunting effort and harvest on an annual basis for guided-hunting (typically non- BC residents) and BC residents (excluding First nations), by wildlife Management Unit (MUs). There are four MUs that overlap the Nass South SRMP area and together these four MUs cover 3.7 million hectares of land, compared with 0.7 million hectares comprising the Nass South SRMP area.

According to MOE data, on average each year, non-BC residents harvest 27 animals in the 4 MUs overlapping the Nass South SRMP area, mainly black bear (19), grizzly bear (2), and goat (4). When pro-rating to the Nass South SRMP area, this translates to an average of 3.5 animals per year, or 1.8 black bear, 0.6 grizzly bear, 0.9 goat, and 0.2 moose. When compared to the BC average, the Nass South SRMP area does not appear to be provincially significant for guided hunting.

Chart 15 Guided Hunting Effort in Nass South SRMP Area as a % of BC



Note: excluding hunting effort by BC residents.

Source: MOE, Summary Statistics Data Base; Appendix 4 provides more detail.

There are no estimates of the contribution of the Nass South SRMP area to guide-outfitting revenues in that region. There are 45 guide-outfitters in the Skeena region, and on average, each guide-outfitter has revenues of \$400,000 for 236 hunting days and 192 non-hunting days. On average, each operation has a payroll of \$150,000 and generates employment for 10 people representing 4 Person Years (PYs). The net economic value of each guide-outfitter in the Skeena region is estimated at approximately \$30,000.

While two guide-outfitters operate partly in the Nass South SRMP, guided hunting activities in the Nass South SRMP are likely minimal, with the area accounting for 38 guided hunting days, based on the MOE data for the four MUs pro-rated to the Nass South SRMP area. Net economic value of guided hunting activities may be in the order of \$5,000 per year. Appendix 4 provides more detail.

⁵⁴ For example, in 2005, BC-based Raincoast Conservation Society purchased a guide-outfitting licence in the Central Coast for \$1.35 million dollars. Source: Press Release, Chartrand, Chief Alex of Wulkinuxv Nation, Chief Ross Wilson of Heiltsuk Nation et al., *Christmas Comes Early for Bears of the Great Bear Rainforest, Conservation Organization and First Nations Take Control of Coastal Trophy Hunt*, December 13, 2005.

Fishing Lodges, Fishing Charters and Guided Angling

The Nass salmon fishery is primarily fished commercially in coastal waters, but there is also a very significant Aboriginal fishery and a sport fishery that is concentrated in the rivers and lakes of the Nass watershed.

Meziadin Lake is the main sportfishing lake in the Nass South SRMP area. It features a number of popular sportfishing species including salmon, whitefish, Dolly Varden, kokanee, rainbow, bull trout and steelhead (Meziadin River). Meziadin Lake is one of six lakes in the Skeena region, which are featured in the *2007-2008 Freshwater Fishing Regulations Synopsis*.⁵⁵ According to that synopsis, there is no fishing allowed on Meziadin River, from signs at all outlets of Meziadin Lake to Nass River, between January 1 and June 15.⁵⁶ There are two fish viewing areas at Meziadin Lake, the Hanna Creek salmon viewing area and the Meziadin fish ladder viewing area.

There are a number of significant rivers crossing the Nass South SRMP area including the Kinskuch River, Nass River, White River and Meziadin River. There are also numerous creeks and small lakes. Some of the rivers are subject to bait bans between August 1 and December 31, but other than those restrictions, fishing is subject only to general provincial regulations on most rivers and creeks. Fishing in the Nass River is challenging due to naturally occurring turbidity, and siltation is a problem throughout much of the Nass South SRMP plan area due to soil conditions.⁵⁷

The Kwinageese River on the eastern boundary of the Nass South SRMP area appears to be the only classified Class II river within the Nass South SRMP area. Classified waters are highly productive trout streams which are subject to various regulations and licensing requirements.⁵⁸ The Kwinageese River is classified as Class II water between September 1 and October 31, and a steelhead stamp is mandatory during that time period. There does not appear to be any other Class I or Class II classified waters in the Nass South SRMP area, although some Class I or Class II rivers are near the boundaries of the Nass South SRMP. These include the Kispiox River and Kitwanga River, which are classified as Class II waters from September 1 to October 31, and where a steelhead stamp is mandatory during that time period.

The two guide-outfitters that operate in the Nass South SRMP area advertise salmon and steelhead fishing as part of their product package, but it is likely that most fishing in their territories would take place in rivers outside the Nass South SRMP area.

Bell II Lodge is one of the largest sportfishing lodges in the BC Northwest. It is located outside the Nass South SRMP area approximately 96 km north of Meziadin Junction. Bell II Lodge can accommodate 40 guests in 5 log chalets and it offers fully guided all-inclusive steelhead fishing packages on the Bell Irving and Upper Nass rivers.⁵⁹

There is at least one fishing charter based in Stewart (Portland Fishing Charters) but that company caters mainly to ocean fishing.

⁵⁵ BC Ministry of Environment, *2007-2008 Freshwater Fishing Regulations Synopsis*, 96 pages.

⁵⁶ *Ibid*, page 72 and 73.

⁵⁷ Based on personal communication with George Schultze, BCMOE, March 26st, 2007.

⁵⁸ For more detail on BC's classified waters, please refer to: BC Ministry of Environment, *2007-2008 Freshwater Fishing Regulations Synopsis*.

⁵⁹ Bell II Lodge website: www.bell2lodge.com, accessed June 18th, 2007. On occasion clients are also taken to Meziadin River, Bear River, Damdochax River and others.

Heli-Skiing

There are two heli-skiing operators that operate in the Nass South SRMP area:⁶⁰

- Last Frontier Heliskiing Ltd.⁶¹, which operates from Bell II Lodge 96 km from Meziadin Junction, and from the Ripley Creek Inn in Stewart; and
- Skeena Heli-skiing (Ray Carrier), which is based in Smithers and operates out of Bear Claw Lodge 63 km north of Hazelton along the Kispiox River.

Last Frontier Heli-skiing's tenure covers 890,000 hectares and encompasses much of the northwestern part of the Nass South SRMP area. Their entire tenure goes as far north as Bob Quinn Lake, approximately 140 km from Meziadin Junction, and covers part of the Skeena Mountains on the east, and the Coast Mountains on the west.

Last Frontier Heli-skiing Ltd. can hosts 30 clients per week at its Bell II Lodge and another 15 clients per week at its Ripley Creek Inn lodge. The company started operating from Bell II Lodge in 1996, and it expanded its operations to the Ripley Creek Inn in 2005. During peak operations, Last Frontier Heli-skiing generates employment for approximately 35 people including its own guides and assistants as well as contractors involved in helicopter operations and maintenance, and lodge operations. In April 2007, it reported accommodating approximately 400 clients per year.⁶²

Hunting by BC Residents

According to MOE data, on average each year, BC residents (excluding First Nations) harvest 173 animals in the 4 MUs overlapping the Nass South SRMP area and non-BC residents (guided hunting) harvest 27 animals. When pro-rated to the Nass South SRMP area, BC residents harvest an average of 45 animals each year from the SRMP area including 12 black bears, 2 grizzly bears, 3 goats, 25 moose, 2 deer and 1 wolf. The Nass South SRMP area is an important sport hunting area for black bear and grizzly bear, but much less so for the other large game animals such as moose, caribou and deer. Chart 16, as well as Appendix 4, provide more detailed data.

MOE does not record harvesting effort and harvest by First Nations. It is estimated that the Gitanyow harvest approximately 40 to 50 moose each year, although this would likely include both the harvest from the Cranberry TSA as well as from the Nass South SRMP area.⁶³

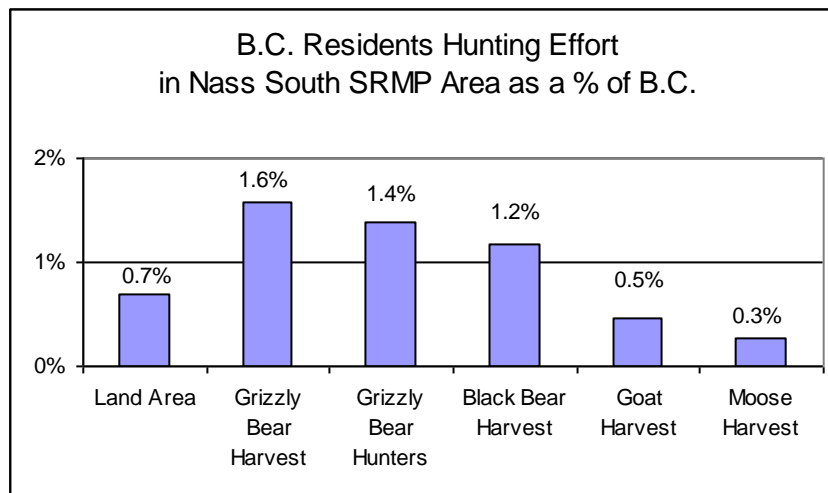
⁶⁰ Based on discussions with Bobby Love at BC MAL, March 31st, 2007.

⁶¹ Based on discussions with Bobby Love at BC MAL, March 31st, 2007.

⁶² Based on review of company website, and various news reports.

⁶³ Personal communication with Glenn Williams, Gitanyow Hereditary Chief, March 29, 2007.

Chart 16 Hunting Effort by BC Residents Excluding First Nations



Notes:

1. As is the case for all of BC, the Nass South SRMP data on resident hunting exclude the hunting effort by First Nations people as they are not required to report the hunting effort to the province.
2. Data for the Nass South SRMP area are estimated based on the hunting effort and harvest from the four management units that overlap the Nass South SRMP area, namely 6-14, 6-16, 6-17 and 6-30, and pro-rating effort and harvest assuming that 80% of MU6-16, and 5% of MU6-14, 6-17, and 6-30 are in the Nass South SRMP area.

Source:

- Nass South SRMP: BC MOE, Fish and Wildlife Branch, *Summary Statistics Data Base, Hunter Harvest and Effort*.
- BC Data: MOE, Fish and Wildlife Branch, *Big Game Hunting Statistics for the 2002/03 Season*.
- Appendix 4 provides the complete data.

Other Non-Guided Activities

Recreation is defined to include all public/self-guided activities that do not include commercial recreation for which a fee is paid. Using this broad definition, self-guided recreation may be undertaken by individuals who are not local residents.

Some of the non-guided activities that take place in the Nass South SRMP include:

Spring/Summer/Fall	Winter/Spring
<ul style="list-style-type: none"> • Angling • ATVs, motorbikes • Botanical forest products/ wood gathering • Hiking, wildlife viewing, photography • Horseback trail riding • Hunting • Mountain biking • River rafting, canoeing, kayaking • Rock hounding & recreational prospecting 	<ul style="list-style-type: none"> • Ski-touring • Snowmobiling • Hunting

The Nass South SRMP area has the following tourism and recreation features:⁶⁴

- Four small trails near Stewart that follow short historic mining trails in the area (Sluice Box/Barney’s Gulch Trail, United Empire Loyalist Trail, American Creek Trail (4 km), and Ore Mountain Trail (3.5 km).

⁶⁴ Based on: BC Ministry of Forests and Range, *Kalum Forest District Recreation Map*.

- Two recreation sites on the east side of the Nass South SRMP area along the Brown Bear Forest Service Road, namely Jigsaw Lake approximately 10 km along that road, and Bonney Lake, some 34 km along that same road.
- A third recreation site some 13 km north of Stewart off Highway 37 A on Clements Lake.
- The Bonney Lakes Canoe Route: a 5 lake chain that takes 2 to 4 days to complete with primitive camping areas and portages ranging in length from 30 metres to 700 metres.
- Two fish viewing areas near Meziadin Lake namely, the Hanna Creek salmon viewing area and the Meziadin fish ladder viewing area.
- The Swan Lake Kispiox River Provincial Park, which offers wilderness canoeing and kayaking.

The Nass South SRMP area includes an area designated by the Ministry of Forests and Range for Use, Recreation and Enjoyment of the Public (UREP) along the Bear River. That UREP area follows Highway 37A for approximately 20 km between Stewart and Meziadin Junction and includes the Bear Glacier, and Entrance Peak.

The net economic value of non-commercial recreation activities may be represented by the participants' willingness to pay over and above the level of expenditures actually incurred in undertaking the activities. Estimates of net economic value for various outdoor activities range from \$8 and \$15 per day, to well over \$50 per day. (Appendix 4 provides examples of estimates from various studies).

There are no data on the number of recreation days experienced in the Nass South SRMP area. Given the remoteness of the area, and small populations in the region, the number of recreation days is likely to be modest relative to most other areas of BC. The hunting effort for the Nass South SRMP area for BC residents is estimated at 846 hunting days per year based on the MOE data for the 4 MUs that overlap the area, but this is only one of a number of the recreation activities that take place in the region. At a minimum net economic value of \$10 per recreation day, the 846 hunting activity days result in an annual net economic value of \$8,460 dollars. There are estimates of net economic value from resident hunting as high as \$55 per hunting day (see Table 47 in Appendix 4).

Potential for Growth in Backcountry Tourism

The Nass South SRMP area has significant front country and backcountry tourism potential, as well as First Nations cultural tour opportunity. The remoteness and limited access to the area that preserves the wilderness values and experience for visitors, also limits the growth potential for many types of tourism. Some of the backcountry areas with high potential include:

- Areas rated as having Very High Significance under the ILMB Tourism and Recreation Features Inventory map. These include the area along Highway 37A between Meziadin Lake and Stewart, and in particular the area near Bear River Glacier Park, as well as the area encompassing Mount Bayard north of Stewart.
- Areas rated as Highly Significant include the area surrounding Meziadin Lake, the region north and south of Highway 37A, the area near Kiniskuch Lake where the Nisga'a hold a commercial tourism and recreation tenure, as well as the region near Boney Lake. Jigsaw

Lake near Swan Lake Provincial Park is also of significance.

- Swan Lake Kispiox River Provincial Park also offers some opportunity for remote wilderness tourism, although most of the park is not accessible by vehicle and there are few trails.

2.7.4 Nass South SRMP Management Direction Affecting Tourism & Recreation

The tourism and recreation sectors were not represented at the planning table, and there is no chapter in the Nass South SRMP dealing with tourism or recreation issues. The following table lists the management direction in the Nass South SRMP area that is relevant to the tourism and recreation sectors, under both the Base Case and the Nass South SRMP.

Table 14 Nass South SRMP Management Direction of Relevance to Tourism & Recreation

	Base Case Management Direction	Nass South SRMP Management Direction
Protected Areas (PA)	<ul style="list-style-type: none"> • 0.8% of the total area, or 5,203 hectares including Meziadin Lake Park, an area protected primarily for recreation purposes 	<ul style="list-style-type: none"> • 4.45% of total area, or 29,465 ha including the proposed Hanna-Tintina PA, which includes some recreation opportunity and potential, although the main purpose of the PA is ecological and cultural • Recommended management of Hanna-Tintina PA grandfathers all tenures, and specifically states that tenures are to be eligible for transfer; moreover, specifies that trapping, guiding and commercial recreation, including heli-skiing will be considered acceptable uses.
Other Special Mgt Area	<ul style="list-style-type: none"> • MOFR designated UREP area along the Bear River that includes the Bear Glacier, and Entrance Peak. 	<ul style="list-style-type: none"> • UREP area as per Base Case Management • No timber harvesting in Old Growth Management Areas (OGMAs) and FEN hydriparian areas, which together cover 56,839 ha, or 8.6% of the total landbase.
Wildlife and Fishing Resources	<ul style="list-style-type: none"> • Specific objectives for High Value moose habitat and for mountain goat winter range • Other fisheries and wildlife values mainly managed through <i>FRPA</i> 	<ul style="list-style-type: none"> • Provides management direction to maintain function of Moose Winter Range (20,572 ha), Mountain Goat Winter Range (33,378 ha) and High Value Grizzly Bear habitat (26,944 ha). • Provides management direction to maintain riparian areas and fish habitat through FEN core and FEN buffer zones, and through Water Management Units established to maintain water quality and quantity.
Cultural Sites/ Values	<ul style="list-style-type: none"> • Mainly managed through <i>FRPA</i> 	<ul style="list-style-type: none"> • Preserve pre 1846 and post 1846 cultural sites, as well as cultural heritage resources through specific consultation requirements.
<p>Other Management Direction Affecting Tourism and Recreation: The following management direction relates to tourism and recreation, but will not change as a result of the Nass South SRMP.</p>		
Nisga'a Wildlife Mgt Area	<ul style="list-style-type: none"> • The Nass Wildlife Area, established under the Nisga'a Final Agreement, covers 492,780 hectares or 74% of the Nass South SRMP area. Wildlife populations and harvesting quotas are managed for this area under a joint Wildlife Committee comprised of representatives from the governments of BC, Canada, and the Nisga'a Nation. 	
Visual Quality Objectives	<ul style="list-style-type: none"> • 70,470 hectares (10.6% of total land area) are managed under specific VQOs; areas with Preservation VQOs cover 19,800 hectares (3% of total landbase), with the balance requiring Retention, Partial Retention or Modification. 	
<i>Forest and Range Practices Act</i>	<ul style="list-style-type: none"> • <i>FRPA</i> requires consideration of ecological and other values associated with the landbase, including recreation values, in considering approval of Forest Development Plans. 	

2.7.5 Impacts of Nass South SRMP on Tourism and Recreation Values

The following table shows the degree to which the Nass South SRMP may help conserve tourism and recreation values, in terms of the distribution of some tourism and recreation values across the land use zoning that will result from the SRMP.

Table 15 Summary GIS Data on Tourism Values in the Nass South SRMP Area

Nass South SRMP GIS Data	Total Number/ Area (hectares)	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina Protected Area	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas	Total
Total Area	662,509 ha	1,564	271	5,203	24,262	33,337	23,502	574,371	662,509
Existing Tourism and Recreation:									
Facilities	10 Fac.	7	1					2	10
Features	9 Fea.				3		1	5	9
Commercial Recreation Tenures	259,190 ha	860	14		9,126	6,002	1,692	241,497	259,190
Recreation Opportunity Spectrum									
Roaded Modified	191,066 ha	626		362	12,891	10,940	13,559	152,689	191,066
Roaded Natural	1 ha							1	1
Primitive	198,060 ha	14			75	4,291	67	193,614	198,060
Rural	13,205 ha	287	138	359	1,701	58	2,707	7,955	13,205
Semi Primitive Motorized	148,557 ha	461	55	4	5,912	6,866	3,640	131,620	148,557
Semi Primitive Non-Motorized	107,520 ha	15	78	449	3,682	11,175	3,525	88,596	107,520
Unclassified	4,099 ha			4,030		7	1	61	4,099
Wildlife									
High Value Grizzly Bear Habitat	26,944 ha	14		62	1,404	1,380	5,766	18,319	26,944
Moose Winter Range	20,572 ha	20		28	1,376	427	7,814	10,907	20,572
Mountain Goat Winter Range	33,378 ha				6	1,212	626	31,534	33,378
Visual Quality Objectives									
Preservation	19,804 ha	39				1,089	1,352	17,325	19,804
Retention	13,359 ha	17			2,858	1,499	125	8,860	13,359
Partial Retention	14,895 ha	40			2,477	990	287	11,100	14,895
Modification	22,410 ha				3,850	1,147	864	16,549	22,410
Sub-Total VQOs	70,468 ha	96			9,185	4,726	2,627	53,834	70,468

Nass South SRMP GIS Data	Total Number/ Area (hectares)	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina Protected Area	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas	Total
Total Area	662,509 ha	0.2%	0.0%	0.8%	3.7%	5.0%	3.5%	86.7%	100%
Existing Tourism and Recreation:									
Facilities	10 Fac.	70.0%	10.0%					20.0%	100%
Features	9 Fea.				33.3%		11.1%	55.6%	100%
Commercial Recreation Tenures	259,190 ha	0.3%	0.0%		3.5%	2.3%	0.7%	93.2%	100%
Recreation Opportunity Spectrum									
Roaded Modified	191,066 ha	0.3%		0.2%	6.7%	5.7%	7.1%	79.9%	100%
Roaded Natural	1 ha							100.0%	100%
Primitive	198,060 ha	0.0%			0.0%	2.2%	0.0%	97.8%	100%
Rural	13,205 ha	2.2%	1.0%	2.7%	12.9%	0.4%	20.5%	60.2%	100%
Semi Primitive Motorized	148,557 ha	0.3%	0.0%	0.0%	4.0%	4.6%	2.5%	88.6%	100%
Semi Primitive Non-Motorized	107,520 ha	0.0%	0.1%	0.4%	3.4%	10.4%	3.3%	82.4%	100%
Unclassified	4,099 ha			98.3%		0.2%	0.0%	1.5%	100%
Wildlife									
High Value Grizzly Bear Habitat	26,944 ha	0.1%		0.2%	5.2%	5.1%	21.4%	68.0%	100%
Moose Winter Range	20,572 ha	0.1%		0.1%	6.7%	2.1%	38.0%	53.0%	100%
Mountain Goat Winter Range	33,378 ha				0.0%	3.6%	1.9%	94.5%	100%
Visual Quality Objectives									
Preservation	19,804 ha	0.2%				5.5%	6.8%	87.5%	100%
Retention	13,359 ha	0.1%			21.4%	11.2%	0.9%	66.3%	100%
Partial Retention	14,895 ha	0.3%			16.6%	6.6%	1.9%	74.5%	100%
Modification	22,410 ha				17.2%	5.1%	3.9%	73.8%	100%
Sub-Total VQOs	70,468 ha	0.1%			13.0%	6.7%	3.7%	76.4%	100.0%

The Nass South SRMP will likely benefit the tourism and recreation sector as follows:

- **The Hanna-Tintina PA** has some of the key recreational features of the Nass South SRMP area including key viewpoints, a main recreation trail, and the Hanna Creek salmon viewing area. The PA is also a popular destination for backcountry skiing and snowmobiling, and it is

part of the current heli-skiing commercial tenure, overlapping 9,126 hectares of the tenure (the Nass South SRMP specifically provides for heli-skiing as an acceptable use in the proposed PA). Heli-skiing is one of the most important guided tourism activities in the Nass South SRMP area.

- Approximately **13% of the Nass South SRMP area will be protected from timber harvesting** compared to 0.8% under the Base Case. The proposed No-Timber Harvesting Areas include existing and proposed PAs, the OGMAs and FEN hydroriparian areas. The PA, OGMAs and FEN hydroriparian areas represent a variety of primitive, semi-primitive and roaded modified areas, as defined by the Recreation Opportunity Spectrum. This is representative of the Nass South SRMP area where one third is ranked primitive, one third is roaded modified, and one third is semi-primitive either motorized or not motorized.
- The Nass South SRMP does not propose changes to the Scenic Areas inventory nor associated Visual Quality Objectives; however, **a significant portion the forested areas managed for VQOs will be in areas where timber harvesting is not permitted**. Of the 70,468 hectares with established VQOs, 16,538 hectares (23.5%) will be in no-timber harvest areas under the SRMP.
- The Nass South SRMP provides management direction to **preserve wildlife habitat**, with specific management objectives for moose winter range, mountain goat winter range, and high value grizzly bear habitat. Additionally, 47% of the identified moose winter range, 32% of the high value grizzly bear habitat and 5.5% of identified mountain goat winter range will be in areas where timber harvesting is not permitted. Although the Nass South plan area overlaps with two guide outfitting tenures, it is not particularly significant for the guide-outfitting sector (on average, guided hunting accounts for 3 to 4 animals killed per year, usually grizzly bear, black bear, mountain goat and the occasional moose, see Section 2.7.3 on Backcountry Tourism and Recreation). The Nass South SRMP area is, however a more provincially significant hunting area for BC residents, particularly for grizzly and black bear, but also for large game animals such as moose, caribou and deer. The Nass South area is also a significant source of moose for First Nations consumption.
- Protecting riparian areas through the FEN hydroriparian zones, a specific management objective to maintain or restore fish habitat, and establishment of Water Management Units will provide **greater protection of fish habitat**. Sportfishing is a major tourism and recreation activity in the Nass South SRMP area, notably at Meziadin Lake. Commercial fishing is also important to the local First Nations and communities that depend on the resources of the Nass South SRMP area, with Meziadin Lake and its major tributaries accounting for 80% of the total Nass sockeye assessment within the Nass South SRMP (see Section 2.6.3 on commercial fishing).
- The SRMP will provide **greater land use and operational certainty for tourism service providers** in some parts of the plan area.

Summary of Nass South SRMP Impacts on the Tourism and Recreation Sector

The Nass South SRMP area has features that are important to the tourism and recreation sectors. Key activities in the Nass South SRMP area include sportfishing (Meziadin Lake and other rivers & lakes); hunting, particularly for BC residents and First Nations; heli-skiing, snowmobiling, backcountry skiing and hiking, and canoeing/kayaking along the various canoe routes such as the Bonney Lakes Canoe Route and the Swan Lake Upper Kispiox River Provincial Park.

Although there is no specific management direction in the plan for tourism and recreation, the Nass South SRMP will likely benefit the tourism and recreation sectors. Key elements that will benefit tourism and recreation include:

- establishing the Hanna-Tintina PA, an area which includes key viewing points, trails and recreational features as well as part of the commercial heli-skiing tenures;
- establishing no-timber harvest areas through implementing PA, OGMAs and FEN hydroriparian zones;
- enhancing wildlife habitat preservation with species specific management direction as well as PAs and no timber harvest zones encompassing 47% of the moose winter range, 32% of the high value grizzly bear habitat and 5.5% of mountain goat winter range;
- providing greater protection of fish habitat through the preservation of riparian areas, water quality and water quantity; and
- providing somewhat greater land use certainty and operational certainty for tourism service providers.

3 Impacts on Communities in the Nass South Surrounding Area

This section provides an overview of communities in the Nass South surrounding area and summarizes impacts the Nass South SRMP may have on those communities.

3.1 Overview of Communities in Nass South Surrounding Area

There are approximately 542 people who reside within the boundaries of the Nass South SRMP (based on 2006 Canada Census data). This includes 500 residents in the Stewart District Municipality, and another 42 who reside within the Kitimat-Stikine Electoral Area A, which includes Meziadin Junction, Cranberry Junction and the ghost town of Alice Arm. (The later 2 locations are actually just outside the boundaries of the Nass South SRMP area).

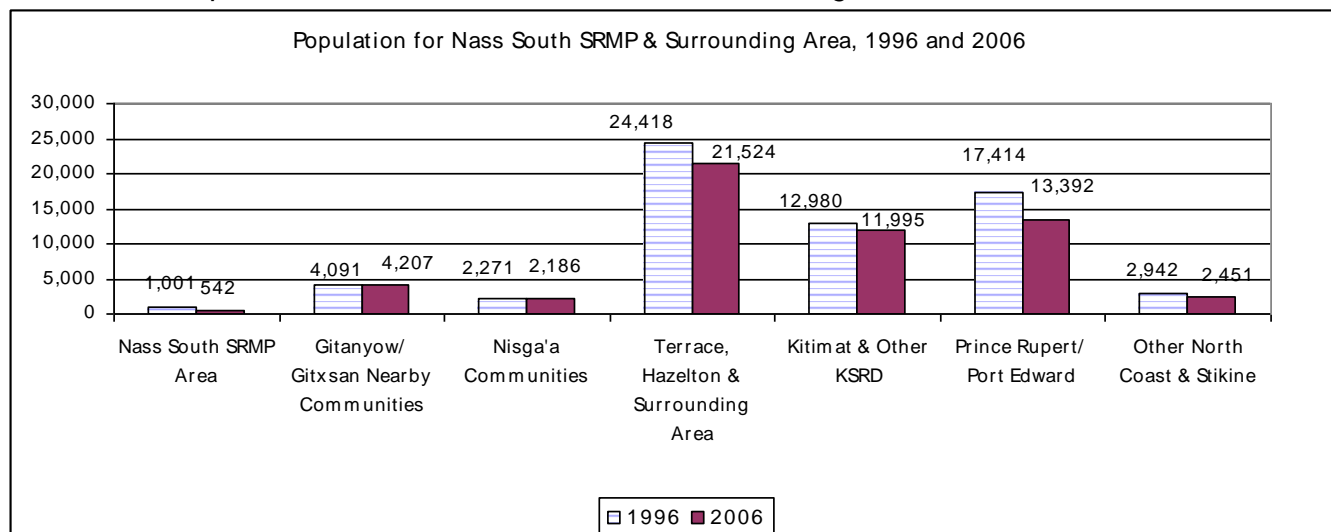
Other communities which may be directly affected by land and resource use in the Nass South SRMP area include:

- Eight Gitanyow/Gitxsan communities, which are located between 44 km (Gitanyow) and 138 km (Morisetown) from Cranberry Junction. These 8 communities have a population of approximately 4,200 people (2006 estimates from the Skeena Native Development Society).
- Four Nisga'a communities, which are located approximately 50 km (Nass Camp and New Aiyansh) and 128 km (Gingolx) from Cranberry Junction (based on the distance using the 4-wheel drive access road between Cranberry Junction and New Aiyansh). The Nisga'a communities have a population of approximately 2,200 people (2006 estimates from the Skeena Native Development Society).
- The communities of New Hazelton (116 km), Hazelton (123 km) and South Hazelton. New Hazelton and Hazelton have a combined population of 920 people. South Hazelton is an unincorporated area but it is the major community of the KSRD Electoral Area B which has 1,618 people (2006 Canada Census).
- The Terrace area which includes the District Municipality of Terrace (11,320 people), the

KSRD Electoral Area C which includes Rosswood, Usk and the surrounding area (2,827 people), the Kitselas Nation and Kitsumkalum Nation (combined population of approximately 585 people), and the KSRD Electoral Area E (4,402 people).

The populations from the above communities total approximately 28,000 people, which for the Nass South SRMP socio-economic base case will be called the “primary impact area”. Also impacted, but to a lesser extent, are the communities of Kitimat (approximately 222 km from Cranberry Junction), Prince Rupert & Port Edward (approximately 370 km from Cranberry Junction), and other communities on the North Coast and in the Stikine region north of the KSRD. When all those communities are included, the total population potentially impacted by the SRMP climbs to approximately 54,000 people.

Chart 17 Populations for Nass South SRMP and Surrounding Areas



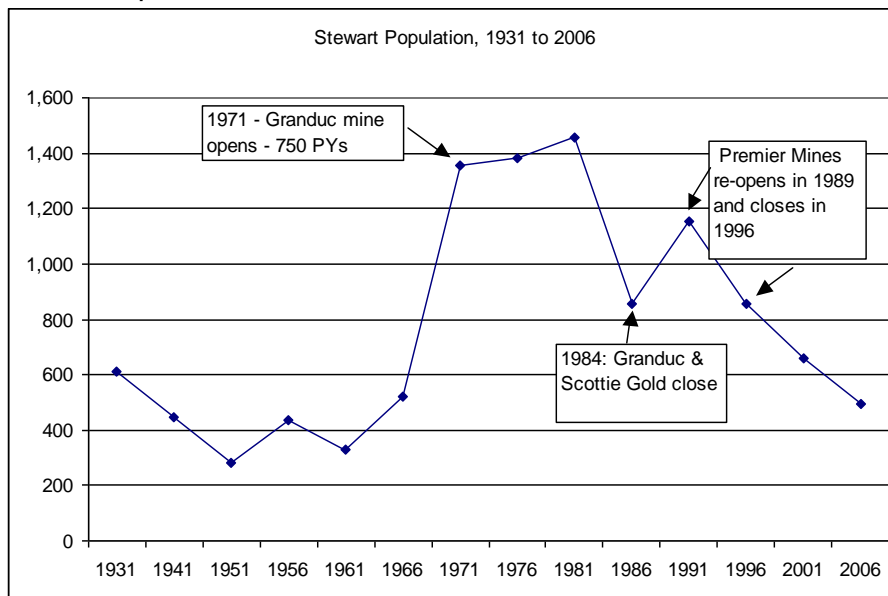
Notes:

1. Nass South SRMP area includes Stewart and KSRD Electoral Area A which includes Meziadin Junction and Cranberry Junction. Cranberry Junction is actually just outside the boundaries of the Nass South SRMP area.
2. KSRD: Kitimat-Stikine Regional District; the KSRD includes the Nass South SRMP area, the Gitanyow/Gitxsan and Nisga'a communities, Terrace, Hazelton and surrounding area, as well as other communities such as Kitimat.
3. Prince Rupert and the North Coast are part of the Skeena-Queen Charlotte Regional District. The Stikine Regional District north of the KSRD.

Source: Canada Census; and Skeena Native Development Society for Gitanyow/Gitxsan & Nisga'a communities.

Between 1996 and 2006, the population of Stewart and rural areas in the Nass South SRMP area dropped by half from 1,001 in 1996 to 542 in 2006, and is about one third what it was between 1971 and 1991 when the Granduc mine was operating. The population of Stewart has been very dependent on the mining sector, as shown on the following graph.

Chart 18 Stewart Population, 1931 to 2006



Note: Excludes Canada Census undercount.

Source: Statistics Canada, BC Municipal Census Populations, as reported by BC Stats; bcstats.gov.bc.ca/data/pop.

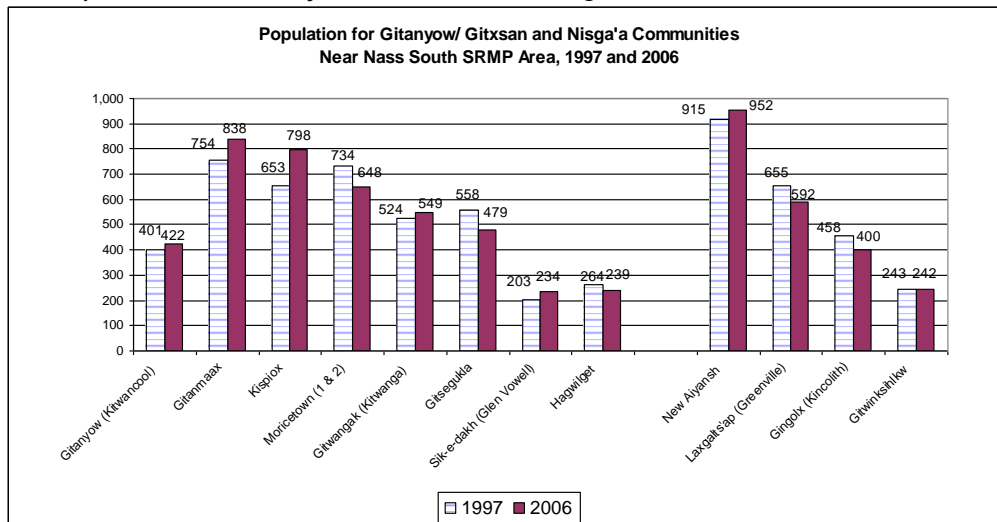
Between 1996 and 2006, the Canada Census population data show declines in population for Hazelton/New Hazelton (-21%), Terrace (-11%), Kitimat (-19%), Prince Rupert Census Agglomeration (including Port Edward) (-23%), Kitimat (-19%), and Stikine region (-20%). Detailed population data are presented in Appendix 5.

Between 1997 and 2006, the Skeena Native Development Society (SNDS) population data for the Gitanyow/Gitxsan communities show a small population increase, while the Nisga'a communities show a small drop in population. By contrast for those same communities, the 1996 and 2006 Canada Census data show lower population figures overall, approximately 12% lower for the Gitanyow/Gitxsan communities and 14% lower for the Nisga'a communities, but tend to show a population increase between 1996 and 2006 (10% increase for the Gitanyow/Gitxsan communities and 8% increase for the Nisga'a communities).

Chart 19 shows the population for each of the Gitanyow/Gitxsan and Nisga'a communities based on the SNDS data for 1997 and 2006.

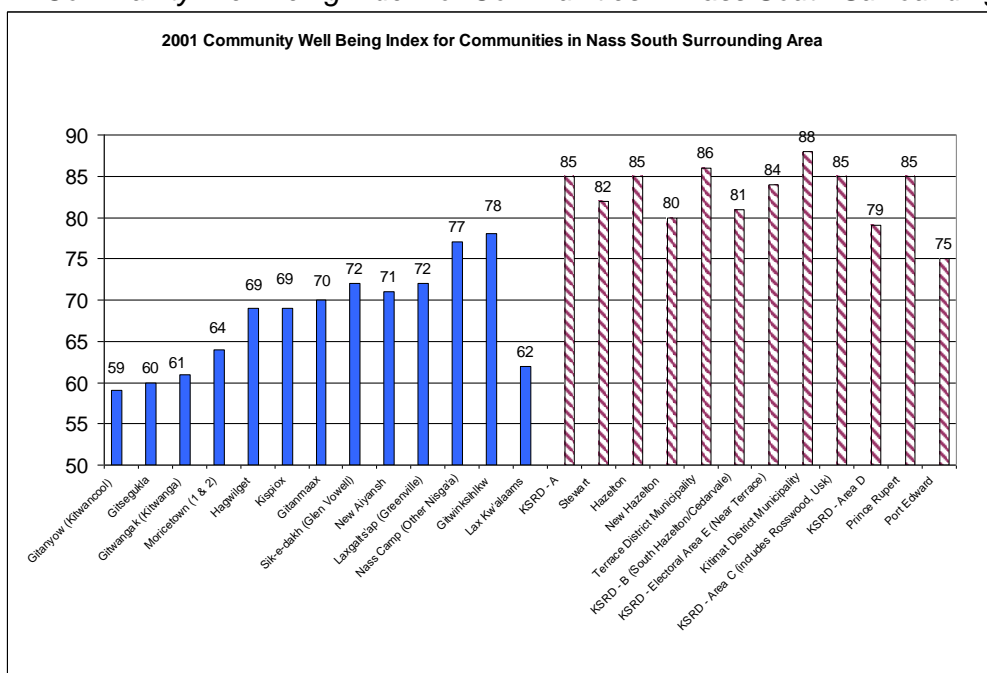
The Federal Government (Indian and Northern Affairs Canada's Research and Analysis Directorate) has developed a Community Well Being Index (CWB) that combines indications of income, education, labour force activity and housing conditions into a single number or CWB score. Scores can fall anywhere between zero and 100. In BC, the lowest CWB score is 49 (small First Nations community in Peace River). The CWB index tends to be lower for the First Nations communities in the Nass South surrounding area than the non-First Nations communities, as is shown on Chart 20 on the following page.

Chart 19 Population for Gitanyow/ Gitxsan and Nisga'a Communities, 1997 and 2006



Source: Canada Census; and Skeena Native Development Society for Gitanyow/Gitxsan and Nisga'a communities.

Chart 20 Community Well Being Index for Communities in Nass South Surrounding Area



Legend: Solid bars show all communities in the Nass South surrounding area, which are on First Nations reserves, but many of the other communities have a high percentage of residents who are of First Nation heritage.
 Note: Based on 2001 Canada Census data but was published in 2004.
 Source: Indian and Northern Affairs Canada's Research and Analysis Directorate.

3.2 Impacts of the Nass South SRMP on Community Sustainability

3.2.1 Forestry Implications of the SRMP for Plan Area Communities/ Settlements

The Nass South SRMP timber supply model simulations indicate that timber harvesting levels may have to decrease by 94,657 m3 from base case levels, to remain sustainable, while

implementing Nass South SRMP management objectives. This represents a 14.2% decline from the Base Case AAC of 665,000 m³ for the Lower Nass TSA, which includes the Nass South SRMP.

The impacts of the harvest flow projections on forest industry employment depend on the assumptions made regarding the likelihood of timber harvesting in the area reaching the AAC. As noted earlier, the current Nass TSA timber harvest is approximately 164,000 m³ or 25% of the AAC in the Lower Nass. This annual timber harvest level represents the three-year average based on the 2004 to 2006 harvest, which is also approximately equal to the 2007 timber harvest level.

Under current conditions (only 25% of the AAC is being harvested), the forest industry employment put at risk by implementing the Nass South SRMP is estimated at 3 PYs of direct employment for residents of the Nass South area, and an additional 8 PYs of direct employment elsewhere in the primary impact area.

After considering the indirect and induced impacts, the average loss of direct PYs the Nass South SRMP might result in an average loss of approximately 3 PYs in direct, indirect and induced employment in the Nass South SRMP communities (approximately 1% of the labour force in Meziadin Junction and Stewart) and another 10 PYs of direct, indirect and induced employment in the primary impact area (i.e. Gitanyow/ Gitxsan communities, Terrace and other neighbouring communities (0.1% of the existing labour force in those communities). This would not significantly alter the sustainability of these communities.

In BC Interior communities, a loss of employment often results in the out-migration of workers and their families. The existing population to labour force ratio is two persons per individual in the labour force for the Nass South SRMP primary impact area (based on 2006 Canada Census data detailed in Appendix 5). If it is assumed that everyone who loses their job moves away and there are no offsetting job gains in other sectors, then applying this ratio to the forestry dependant employment loss projections above results in an average population loss (relative to base case projections) of 6 people for the Nass South SRMP area (1% of the total population) and 26 people for the primary impact area, which would be negligible.

However, the main impact of the Nass South SRMP on the forest sector is the loss of potential expansion should markets improve. Since only 25% of the AAC is currently being harvested a major increase in timber harvesting activity towards the AAC level is likely to bring noticeable changes to local communities, which would overshadow the loss of expansion potential associated with the Nass South SRMP. As noted in the forestry section of this report (2.2.10), the SRMP may contribute to the social contract to expand timber harvesting in the future should conditions permit.

3.2.2 Other Implications of the LRMP for Plan Area Communities/ Settlements

The Nass South SRMP will have a positive impact on the sustainability of the mushroom harvesting industry. In an average year, some 40,000 kg of pine mushroom may be harvested, resulting in approximately 50 PYs of employment (i.e. some 500 pickers each earning \$2,600 per year). At least half of mushroom pickers are not local residents, but nevertheless, mushroom harvesting is an important income supplement for many local residents and an important element of the social and cultural fabric of the Nass South SRMP primary impact area.

The Nass South SRMP will also likely have a generally positive impact on tourism and recreation

values, which should support marketability and strategic diversification initiatives for the area. It is difficult, however, to estimate the growth potential of the backcountry tourism sector in the Nass area and the extent to which the Nass South SRMP will contribute to that growth. The recommended Hanna-Tintina protected area will benefit the heli-skiing tenure in that area, a sector that is important to the Nass South primary impact area. The Nass South SRMP will also benefit sportfishing, hunting and other wildlife related activities through greater preservation of fish and wildlife habitat.

Metal mining could be an important element of economic diversification in the medium to long term, as the metallic mineral potential in the Nass South SRMP area and associated mineral exploration is, in general, higher than average for BC. Although the Nass South SRMP does not include specific management direction for mining, it reaffirms the two zone approach to mineral exploration and mining. After the Hanna-Tintina area exclusion, 95% of the land base and 96% of the land with High metallic mineral potential remains accessible to mining.

There will also be social benefits associated with the Nass South SRMP including:

- Maintaining the quality of recreational opportunities;
- Providing a greater degree of ecological integrity across the landscape;
- Providing a greater sense of local control over the use of land and resources through greater stakeholder communication and consensus, better resource inventory information, and management that better reflects local interests.

Summary of SRMP Implications for Community Sustainability

The plan provides for sustained pine mushroom habitat and preserves some tourism and recreation values, which should support economic diversity in the region. The Nass South SRMP will have some negative impacts on the forest sector, but the short term impacts are not expected to be significant enough to materially affect the primary impact area communities.

The Nass South SRMP will have a greater impact on the forest sector should future timber markets allow timber harvest levels closer to the AAC, but should this happen, it is likely that the costs associated with the SRMP would go unnoticed in most communities as they experience the benefits of an industry resurgence.

4 Gitanyow Community

This socio-economic assessment recognizes that both First Nations and non-First Nations communities depend on the same land based resources in the Nass South SRMP area for wildlife, fisheries, forestry, mining, tourism, recreation and other socio-economic values. This section provides an overview of specific socio-economic concerns of the Gitanyow people that have not already been covered in other sections of the assessment.

The First Nations reserve community of Gitanyow is the closest to the boundary of the Nass South SRMP area, and is one of 8 Gitanyow/Gitxsan communities that depend at least partly on the resources from the Nass South SRMP area. This section provides an overview of the following:

- Reserve community of Gitanyow;
- Other Gitanyow/Gitxsan communities near Nass South SRMP area;
- Gitanyow land use in the Nass South SRMP area;
- Gitanyow land use vision; and
- Socio-economic impacts of Nass South SRMP on Gitanyow people.

4.1 *Community of Gitanyow*

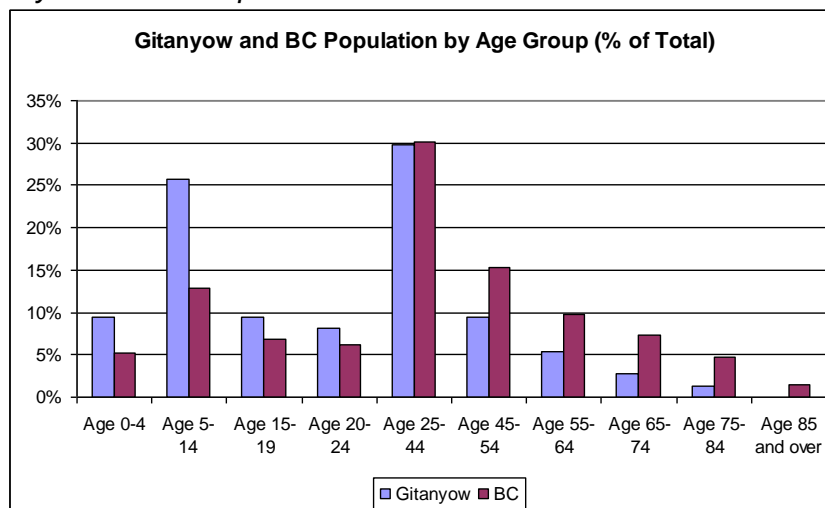
The community of Gitanyow, also known as Kitwancool, is located near Highway 37, approximately 55 km south of the southern boundary of the Nass South SRMP area. Gitanyow is also 20 km north of Gitwangak (or Kitwanga), and approximately 140 km northeast of Terrace, in northwestern BC.

The Skeena Native Development Society (SNDS) reports that in 2006, there were 422 people residing in the community of Gitanyow, of which 407 were of First Nations ancestry. The SNDS reports a total band membership of 705 people. The Canada Census for 2006 reports a population of 387 people, which is 9% lower than the SNDS data. The following comments, tables, and charts are based on a combination of SNDS and Canada Census data.

On average, the Gitanyow community is younger and less educated than the BC average. Some 46% of the Gitanyow population between the age of 25 and 64 do not hold a high school degree compared to 19% for BC. Residents of the Gitanyow community report approximately half the income levels of the BC average, and residents who work full time earn approximately 65% of the BC average.

The Gitanyow community appears to be relatively stable, with 70% of the residents reporting living in the same address 5 years ago, compared to a little over 50% for all of BC. A greater portion of individuals residing in Gitanyow report taking care of children or seniors without pay than the BC average.

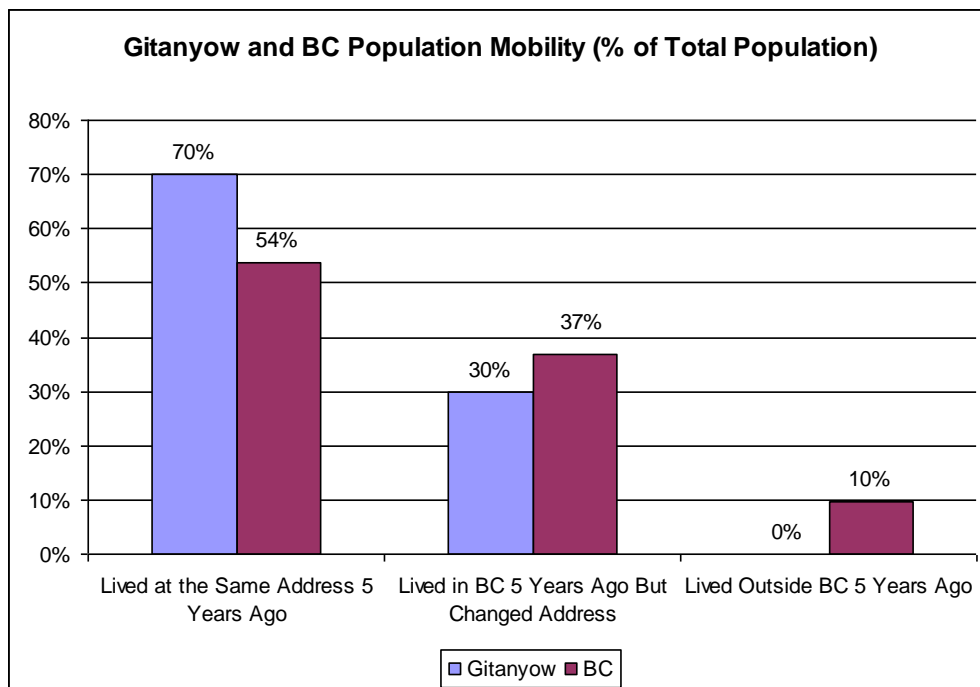
Chart 21 *Gitanyow and BC Population - Selected Statistics*



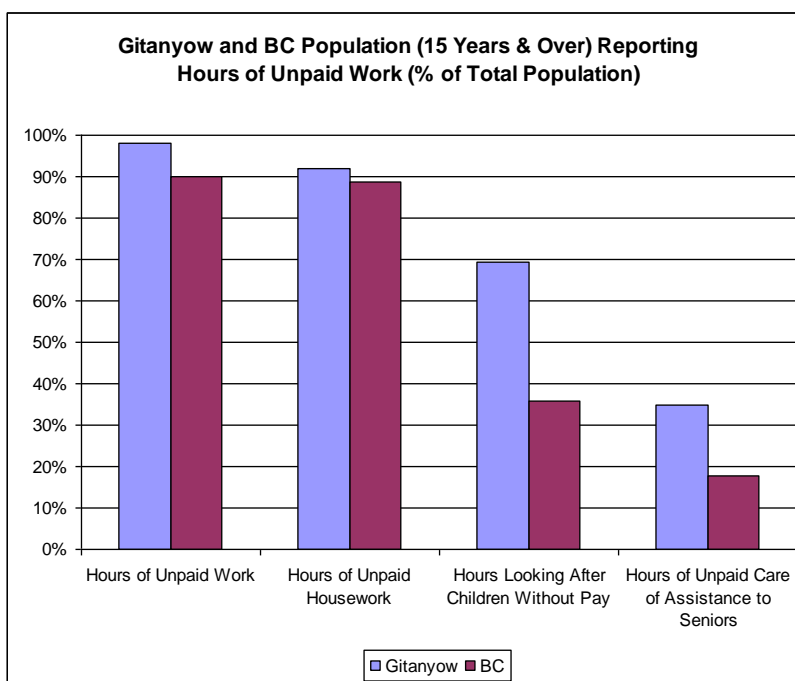
Source: 2001 Canada Census data.

Selected Demographic Statistics	Gitanyow	BC
Median age of the population	24.6	38.4
Average earnings (all persons with earnings (\$))	\$14,421	\$31,544
Average earnings (worked full year, full time (\$))	\$28,709	\$44,307
Persons 15 years of age and over with income	220	2,990,520
Median total income of persons 15 years of age and over (\$)	\$9,248	\$22,095
Education Attainment	Gitanyow	BC
Total population aged 20-34	85	758,040
% of the population aged 20-34 with less than a high school graduation certificate	47.1	14.6
Total population aged 35-44	50	653,345
% of the population aged 35-44 with less than a high school graduation certificate	30	17.5
Total population aged 45-64	60	974,980
% of the population aged 45-64 with less than a high school graduation certificate	58.3	23.5
Total population aged 20-64	195	2,386,365
% of the population aged 20-64 with less than a high school graduation certificate	46	19

Source: 2001 Canada Census Data



Source: 2001 Canada Census Data



Source: 2001 Canada Census Data

4.2 Other Gitanyow/Gitxsan Communities Near Nass South SRMP Area

The community of Gitanyow is one of 8 Gitanyow/Gitxsan communities near the Nass South SRMP. The Gitanyow/Gitxsan communities have a combined population of 4,207 people (2006). In the last 10 years, the population overall has remained relatively stable overall increasing by an average 3% between 1996 and 2006.

Table 16 Population for Gitanyow/Gitxsan Communities

Population for Gitanyow/ Gitxsan Communities Near Nass South SRMP Area	Population - Total Community Residency (from Skeena Native Development Society Data)			
	1997	2000	2006	% Change 1996-2006
Gitanmaax	754	750	838	11%
Gitanyow (Kitwancool)	401	399	422	5%
Gitsegukla	558	491	479	-14%
Gitwangak (Kitwanga)	524	472	549	5%
Sik-e-dakh (Glen Vowell)	203	226	234	15%
Hagwilget	264	293	239	-9%
Kispiox	653	720	798	22%
Moricetown (1 & 2)	734	784	648	-12%
Sub-Total - Gitanyow/ Gitxsan Nearby Communities	4,091	4,135	4,207	3%

Note: The population based on Census data for all 8 communities for 2006 are slightly lower at 3,764 people.

Source: Skeena Native Development Society, Labour Market Census, various years; and Canada Census. See Appendix 5.

4.3 Gitanyow Land Use in the Nass South SRMP Area

The Office of the Gitanyow Hereditary Chiefs is the body mandated by the eight Gitanyow House Chiefs to negotiate a treaty with Canada and BC under the BC Treaty Commission process. The Office of the Gitanyow Hereditary Chiefs entered the treaty process in December 1993, and has reached Stage 4 of the six-stage process, which entails negotiating an agreement in principle.⁶⁵

Gitanyow traditional territories cover some 6,200 km² across the Cranberry, Kispiox and Nass Timber Supply Areas. Draft landscape unit land use plans have been developed, with the full engagement of the Gitanyow Hereditary Chiefs, for the Cranberry TSA and Kispiox TSA portions of Gitanyow traditional territories. These plans cover approximately 37% of asserted Gitanyow traditional territory, with the remaining 63% within the Nass South SRMP area.

Gitanyow House Territories cover 390,925 hectares, or approximately 59% of the Nass South SRMP area. The following table provides more detail for each of the Gitanyow House Territories within the plan boundary.

Table 17 Gitanyow House Territories Within Nass South SRMP Area

Gitanyow House Territories (within Plan boundary)	Overlap With Nass South SRMP Area (ha)	% of Nass South SRMP Area	Portion of Territory in Nass South SRMP Area
Wii Litsxw	161,949	24%	100% or Very Close to 100%
Luux Hon	62,055	9%	100% or Very Close to 100%
Gamlakyeltxw	80,773	12%	Mainly in Nass South SRMP Area
Haitsimsxw	7,813	1%	Approximately One Third In Nass South SRMP Area
Malii/Axwindesxw	30,441	5%	100% or Very Close to 100%
Gwaas Hla'am/ Bii Yosxw	47,882	7%	100% or Very Close to 100%
Gwaas Hla'am	5	0%	Mainly in Cranberry TSA
Watakhayetsxw	7	0%	Mainly in Cranberry TSA
Total	390,925	59%	
Total Nass South SRMP Area	662,510		

Source: BC MAL, GIS statistics, June 2007.

For six of the Gitanyow Wilp (Houses), the Nass South SRMP area provides the foundation for

⁶⁵ <http://www.gov.bc.ca/arr/firstnation/gitanyow/default.html>; accessed May 7th, 2007.

access to traditional cultural, economic and spiritual resources:

- The Gitanyow harvest approximately 6,000 sockeye, a few hundred chum and a few hundred coho salmon per year for community use.
- The Gitanyow harvest approximately 40 to 50 moose each year (may include hunting from the Cranberry TSA as well as Nass South SRMP area).
- The Gitanyow are significant participants in pine mushroom harvesting, an industry estimated to generate approximately \$1.8 million in total industry revenues each year (based on a 40,000 kg harvest from the Nass South SRMP area). In 2000, the Gitanyow Hereditary Chiefs commissioned a harvest productivity and inventory study for pine mushrooms that estimates that between 50% and 75% of Gitanyow residents participate in pine mushroom harvesting.⁶⁶ Over a 4 week period, the study estimated that some 305 pickers visited a small site approximately 3 km north of the Gitanyow Village. Of those 305 pickers, approximately half were from Gitanyow/Kitwanga, 25% were from other Northern BC interior villages and 25% were from elsewhere in BC and Canada. Mushroom harvesting is an important contributor to the Gitanyow economy and cultural fabric.
- The Gitanyow maintain traplines throughout the House Territories.
- Other gathering activities include berry picking (on fire maintained berry patches) for personal consumption and feasting, as well as harvesting various cultural and medicinal plant species.
- Timber resources are also important to the Gitanyow for construction of buildings, pole carving and other traditional uses.

4.4 Gitanyow Land Use Vision

“The Gitanyow vision for future Gitanyow connection with and use of their territories includes:

- Education of present and future generations of Gitanyow, other aboriginal and non-aboriginal people regarding Gitanyow history, economics, culture, spiritual values; how Gitanyow lived, used and sustainably managed the resources of the territories through time.
- Co-operatively participate with Provincial and Federal agencies, Licensees, and adjacent communities in restoration of damaged ecologies throughout Gitanyow Territories.
 - Co-operatively participate with Provincial and Federal agencies, Licensees, and adjacent communities in planning, sustainable management, inventory, and monitoring of the resources of the territories.
 - Participate in economic activities within Gitanyow Territories, to provide economic gain to Huwilp members of Gitanyow, through resource extraction, silviculture, guiding, tourism, cultural and educational initiatives. Participation may include

⁶⁶ Bravi, Rebecca S., and Allen Gottesfeld, *Fall 2000 Pine Mushroom Harvest Productivity and Inventory Study*, Gitanyow Traditional Territories, prepared for Gitanyow Hereditary Chiefs.

revenue sharing, contracts, direct jobs, or business ventures, etc.

Throughout time, the Huwilp members of Gitanyow have been sustained by the resources of their territories; the land was their source of sustenance, culture and economic wealth. Their strong desire is to be able to continue to receive sustenance and economic benefits from their traditional territories.⁶⁷

4.5 Socio-Economic Impact of the Nass South SRMP on the Gitanyow Community

This section reviews the specific impacts of the Nass South SRMP for the Gitanyow community as a whole, and for each Gitanyow house territory.

Many of the management objectives in the Nass South SRMP have been developed specifically to address Gitanyow values and concerns, over and above their general concern for sustaining the ecology of the plan area. The following are key elements of the Nass South SRMP that should address specific concerns expressed by the Gitanyow, and be beneficial to the broad Gitanyow community:

- The proposed Hanna-Tintina protected area, which has experienced significant logging activity in the past, has special significance for the Gitanyow through its contribution to fish habitat, moose habitat, and traditional use trails.
- The Forest Ecosystem Network Core is rich in Gitanyow cultural values that could be compromised by timber harvesting activity, including fish habitat, high value moose habitat cultural use sites, trails and archaeological sites.
- Old Growth Management Areas (OGMAs) will help to preserve many cultural values and traditional land uses based on old growth forests, in addition to preserving high value wildlife habitat.
- Agreement to defer logging in areas that have been proposed as potential Gitanyow treaty settlement lands.
- Management objectives to strengthen protection of cultural heritage sites and areas, including a more rigorous Gitanyow consultation protocol.
- Various measures to maintain and/or restore fish habitat will help support a resource which is fundamental to the foundations of the traditional Gitanyow culture and economy.
- Objectives to maintain fisher and wolverine denning sites should help support Gitanyow trapping activities.
- Objectives to maintain and restore high value moose habitat should help to sustain moose populations, and economically and culturally significant Gitanyow moose hunting activities.
- Managing timber harvesting activities to maintain high value pine mushroom habitat will help

⁶⁷ Extract from: *Landscape Unit Plan (LUP) for all Gitanyow Traditional Territories within the Kispiox and Cranberry Timber Supply Areas, Draft 5 April 2006*, Prepared for: Ministry of Forests, Smithers and Gitanyow Huwilp Society, Prepared by: Philpot Forestry Services (1977) Ltd.

to support Gitanyow mushroom harvesting activities, which provide significant economic, cultural and social values to the Gitanyow.

The following table outlines the distribution of various land based resource values on Gitanyow asserted traditional territory by Gitanyow house territory.

Table 18 Summary GIS Data for Each Gitanyow House Territory

Nass South SRMP GIS Data	Total in Nass South SRMP Area	Wii Litswx	Luux Hon	Gamlakyeltxw	Haitsimsxw	Malii/Axwindexw	Gwaas Hla'am/ Bii Yosw	Total House Territories	% in House Terr.
Total Area (ha)	662,509 ha	161,949	62,055	80,773	7,813	30,441	47,887	390,918	59%
Forests									
THLB (ha) - TSR2	136,603 ha	28,116	22,399	52,024	2,538	12,649	2,402	120,127	88%
Operable Forest Lands (ha)	185,122 ha	39,696	28,742	66,698	2,825	18,099	4,214	160,275	87%
Inoperable Lands for Forestry (ha)	477,387 ha	121,875	33,305	14,071	4,987	12,342	43,672	230,251	48%
Visual Quality Objectives (ha)									
Preservation	19,804 ha	6,858	0	0	0	0	0	6,858	35%
Retention	13,359 ha	7,853	0	408	664	0	5	8,930	67%
Partial Retention	14,895 ha	4,271	504	9,550	0	0	0	14,325	96%
Modification	22,410 ha	10,624	2,935	6,517	0	2,334	0	22,410	100%
Non-Timber Forest Products									
Mushroom Harvesting/Management Areas (ha)	17,571 ha	875	5,533	6,832	397	1,505	227	15,368	87%
Minerals									
Metallic Mineral Potential (ha) (Level 1)									
High	311,930 ha	51,615	10,353	0	0	0	38,604	100,571	32%
Moderate	307,408 ha	106,308	51,695	67,000	7,813	7,133	9,277	249,226	81%
Low	42,627 ha	3,648	0	13,769	0	23,308	0	40,724	96%
Industrial Mineral Potential (ha)									
High	207 ha	0	0	0	0	0	0	0	0%
Moderate	135,113 ha	97,939	10,353	1,028	0	4,861	8,403	122,584	91%
Low	526,644 ha	63,632	51,695	79,741	7,813	25,580	39,484	267,943	51%
Mineral Tenures (ha)	323,472 ha	64,529	12,928	18	0	25	35,581	113,080	35%
ARIS									
Assessment Report Sites	508 sites	47	11	0	0	0	16	74	15%
Expenditures (\$)	30,647,421 \$	4,126,105	660,688	0	0	0	188,019	4,974,812	16%
Metallic Mineral Occurrences									
Developed Prospect	12 occ.	0	0	0	0	0	0	0	0%
Past Producer	41 occ.	1	0	0	0	0	0	1	2%
Producer	0 occ.	0	0	0	0	0	0	0	0%
Prospect	58 occ.	3	1	0	0	0	0	4	7%
Showing	210 occ.	18	1	0	0	0	1	20	10%
Total Occurrences	321 occ.	22	2	0	0	0	1	25	8%
Gas Potential									
Bowser Basin Area (ha)	348,065 occ.	109,934	51,635	78,490	7,813	30,441	9,262	287,574	83%
Tourism and Recreation									
Tourism Facilities	10 occ.	0	0	0	0	0	0	0	0%
Tourism Features	9 occ.	5	0	0	0	1	0	6	67%
Commercial Recreation Tenures (ha)	259,389 ha	83,182	0	0	0	266	7,131	90,579	35%
Kilometres of Trail	15 km	0	0	0	0	2	0	2	13%
Recreation Opportunity Spectrum (ha)									
Roaded Modified	191,066 ha	43,270	32,593	67,755	3,701	15,412	3,876	166,607	87%
Roaded Natural	1 ha	0	0	1	0	0	0	1	103%
Primitive	198,060 ha	62,313	9,215	0	0	0	37,610	109,138	55%
Rural	13,205 ha	5,239	0	4,675	0	209	0	10,124	77%
Semi Primitive Motorized	148,557 ha	31,728	10,635	5,447	0	3,493	1,002	52,305	35%
Semi Primitive Non-Motorized	107,520 ha	19,207	9,611	2,890	18	11,326	5,399	48,451	45%
Unclassified	4,099 ha	0	0	5	4,094	0	0	4,099	100%
Wildlife									
Very High & High Value Grizzly Bear Habitat (ha)	10,414 ha	4,343	2,191	2,272	83	888	417	10,193	98%
Moose Winter Range (ha) (nass_srmp_mwr)	20,572 ha	8,170	3,748	6,569	0	27	1,446	19,961	97%
Mountain Goat Winter Range (ha)	33,378 ha	9,283	3,032	699	0	437	766	14,218	43%
Nass South SRMP Designated Areas									
Hanna Tintina Protected Area	24,262 ha	24,262	0	0	0	0	0	24,262	100%
Old Growth Management Areas	33,337 ha	5,753	5,972	6,143	175	3,015	3,725	24,784	74%
Forest Ecosystem Network (FEN) Hydriparian Zones, Exclusively	23,502 ha	7,942	4,489	7,057	58	1,146	2,460	23,152	99%
General Management Areas	574,371 ha	123,366	51,586	67,569	3,176	26,279	41,704	313,680	55%
Gitanyow Cultural Values									
Kilometres of Trail	118 km	63	29	19	0	0	4	115	97%
Traditional Use Sites (Note 1)	16 sites	(Note 1)	2	8	1	0	0	11	69%
Archaeological Sites	16 sites	8	1	6	0	0	0	15	94%
Nisga'a - Nass Wildlife Area									
Total Area (ha)	492,787 ha	119,716	62,047	80,768	7,585	30,398	47,885	348,400	71%

Note 1: A separate data base not included in the GIS analysis identifies some 40 traditional use sites in the Wii Litswx house territory traditional use sites exclude those in the Wii Litswx house territory.

Although the Gitanyow house territories comprise only 59% of the Nass South SRMP area they contain the following proportions of total plan area values:

- 88% of the plan area's THLB, mainly in Gamlakyeltxw (38% of total THLB for Nass South SRMP area), Wii Litswx (21%), Luux Hon (16%), other territories (13%);

- 87% of plan area mushroom harvesting/ management areas, mainly in Gamlakyeltxw (39% of all Nass South SRMP mushroom areas), Luux Hon (31%), and other territories (17%);
- A relatively low incidence of known mining values with 25 metallic mineral occurrences (representing 8% of all metallic mineral occurrences in Nass South SRMP area); most of these (22 occurrences) are in Wii Litsxw;
- 35% of the Nass South SRMP area mineral tenures, mainly in Wii Litsxw and Gwaas Hla'am/ Bii Yosxw; and
- 98% of the plan area's 'high' and 'very high' value grizzly habitat, 97% of the moose winter range and 43% of the mountain goat winter range.

The following table summarizes the distribution of Gitanyow house territory lands, and some of the identified Gitanyow cultural values, across the various management zones to be established by the Nass South SRMP.

Table 19 Gitanyow House Territories and Cultural Values by Nass South SRMP Area

Nass South SRMP GIS Data	Total in Nass South SRMP Area	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina PA	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas	Total
Total Plan Area	662,509 ha	1,564	271	5,203	24,262	33,337	23,502	574,371	662,509
Gitanyow House Territories									
Wii Litsxw	161,949 ha	378	0	264	24,262	5,753	7,942	123,350	161,949
Luux Hon	62,055 ha	7	0	0	0	5,972	4,489	51,586	62,055
Gamlakyeltxw	80,773 ha	4	0	0	0	6,143	7,057	67,569	80,773
Haitsimsxw	7,813 ha	0	0	4,403	0	175	58	3,176	7,813
Malii/Axwindesxw	30,441 ha	0	0	0	0	3,015	1,146	26,279	30,441
Gwaas Hla'am/ Bii Yosxw	47,887 ha	1	0	0	0	3,725	2,457	41,704	47,887
Total House Territories	390,917	390	0	4,668	24,262	24,784	23,149	313,664	390,917
% of Total Plan Area	59%	25%	0%	90%	100%	74%	98%	55%	59%
Gitanyow Cultural Values									
Existing Kilometres of Trail	118 km	0	0	2	22	2	12	80	118
Traditional Use Sites	16 Sites	0	0	1	0	0	11	4	16
Archaeological Sites	16 Sites	0	0	2	0	0	5	9	16

Nass South SRMP GIS Data	Total in Nass South SRMP Area	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina PA	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas	Total
Total Plan Area	662,509 ha	0.2%	0.0%	0.8%	3.7%	5.0%	3.5%	86.7%	100%
Gitanyow House Territories									
Wii Litsxw	161,949 ha	0.2%		0.2%	15.0%	3.6%	4.9%	76.2%	100.0%
Luux Hon	62,055 ha	0.0%				9.6%	7.2%	83.1%	100.0%
Gamlakyeltxw	80,773 ha	0.0%				7.6%	8.7%	83.7%	100.0%
Haitsimsxw	7,813 ha			56.4%		2.2%	0.7%	40.7%	100.0%
Malii/Axwindesxw	30,441 ha					9.9%	3.8%	86.3%	100.0%
Gwaas Hla'am/ Bii Yosxw	47,887 ha	0.0%				7.8%	5.1%	87.1%	100.0%
Total House Territories	390,917	0.1%		1.2%	6.2%	6.3%	5.9%	80.2%	100.0%
Gitanyow Cultural Values									
Existing Kilometres of Trail	118 km			2.0%	18.9%	1.3%	10.1%	67.7%	100.0%
Traditional Use Sites	16 Sites			6.3%			68.8%	25.0%	100.0%
Archaeological Sites	16 Sites			12.5%			31.3%	56.3%	100.0%

As shown on Table 19, many of the areas where industrial timber harvesting will not be permitted under the Nass South SRMP, are concentrated in the Gitanyow house territories, including:

- the proposed Hanna-Tintina PA is entirely in the Wii Litsxw house territory;
- 74% of the plan area's OGMAs are in Gitanyow house territories, with representation in each of the six house territories that have significant land areas within the plan area;
- 98.5% of the plan area FEN hydroriparian zones are in Gitanyow house territories, with a relatively high representation in Wii Litsxw; (34% of FEN hydroriparian zones), Gamlakyeltxw (30% of FEN hydroriparian zones), and Luux Hon (19% of FEN hydroriparian zones).

The following summarizes the values and impacts of the Nass South LRMP on each house territory.

Wii Litsxw House Territory

Key features of the Wii Litsxw house territory are as follows:

- covers 161,949 hectares of the Nass South SRMP area, or 24% of the total plan area;
- includes 28,116 hectares of THLB (21% of the plan area total and 17% of the Wii Litsxw house territory landbase overlapping the Nass South SRMP area);
- includes the proposed Hanna-Tintina protected area, as well as various tourism features such as Meziadin Lake, Meziadin Lake park, the two fish viewing areas near Meziadin Lake, namely the Hanna Creek salmon viewing area and the Meziadin fish ladder viewing area;
- includes 42% of the Nass South SRMP high value grizzly bear habitat, 40% of the moose winter range and 28% of the mountain goat winter range;
- includes 44% of the plan area's proposed no-timber harvest areas (38,221 hectares out of 86,304 hectares for the entire Nass South SRMP area); this includes the existing and proposed PAs (24,526 ha), OGMAs (5,753 ha or 17% of all OGMAs) and FEN hydroriparian zones (7,942 ha or 34% of all FEN hydroriparian zones); together these represent 24% of the Wii Litsxw house territory landbase overlapping the Nass South SRMP area;
- has 63 km of the 118 km of trails identified as being of cultural significance to the Gitanyow, none of the 16 Gitanyow traditional use sites identified in the GIS data base used for this analysis (a separate data base not included in the GIS analysis identifies some 40 traditional use sites in the Wii Litsxw house territory)⁶⁸, and half of the 16 identified archaeological sites;
- has a greater incidence of known mining values than the other Gitanyow house territories, but mining is nevertheless relatively less important for this territory than for the Nass South SRMP area as a whole; (there are 22 documented metallic mineral occurrences within the Wii Litsxw house territory or 7% of all metallic mineral occurrences reported for the Nass South SRMP area, but this is relatively low considering that the Wii Litsxw House Territory covers 24% of

⁶⁸ Shape file GIS data (nass_srmp_wiilitsxw_TUS_pnt.shp) provided by Ryan Holmes, ILMB, Smithers

the plan area);

- has 64,529 ha of mineral tenures, or 20% of all mineral tenures in the Nass South SRMP area; and
- has moderate gas potential on approximately two-thirds of its landbase (the Wii Litsxw house territory is in the Bowser Basin, but as noted for the entire Nass South SRMP area, the gas potential in that Bowser Basin area is moderate at between 20,001 and 40,000 m³ of potential gas reserves per hectare (see Section 2.4 on the Energy Sector)).

Luux Hon House Territory

Key features of the Luux Hon house territory are as follows:

- covers 62,055 hectares of the Nass South SRMP area, or 9% of the total plan area;
- includes 22,399 hectares of THLB (16% of the plan area total and 36% of the Luux Hon house territory landbase overlapping the Nass South SRMP area);
- includes 31% of the mushroom harvesting/ management areas identified for the Nass South SRMP area;
- includes 21% of the Nass South SRMP area high value grizzly bear habitat, 18% of the moose winter range and 9% of the mountain goat winter range;
- includes 12% of the proposed no-timber harvest areas (10,461 hectares) including none of the existing and proposed PAs, 5,972 ha in OGMAs, or 18% of all plan area OGMAs, and 4,489 ha in FEN hydriparian zones, or 19% of all plan area FEN hydriparian zones; together these represent 17% of the Luux Hon house territory landbase overlapping the Nass South SRMP area;
- has 29 km of the 118 km of trails identified as being of cultural significance to the Gitanyow, 2 of the 16 currently identified Gitanyow traditional use sites and 1 of the 16 archaeological sites; and
- 83% of its landbase is in the Bowser Basin area, but as noted for the entire Nass South SRMP area, the gas potential for that Bowser Basin area is moderate at between 20,001 and 40,000 m³ of potential gas reserves per hectare (see Section 2.4 on the Energy Sector)).

Gamlakyeltxw House Territory

Key features of the Gamlakyeltxw house territory are as follows:

- covers 80,773 hectares of the Nass South SRMP area, or 12% of the total plan area;
- includes 52,024 hectares of THLB (38% of the plan area total), and approximately the same percentage of forested lands (36%); the incidence of THLB is higher in Gamlakyeltxw than the other house territories (THLB covers 64% of the house territory, before deductions for the Nass South SRMP);

- includes 39% of the mushroom harvesting/ management areas identified for the Nass South SRMP area;
- includes 22% of the Nass South SRMP area high value grizzly bear habitat, 32% of the moose winter range and 2% of the mountain goat winter range;
- includes 15% of the proposed plan area no-timber harvest areas (13,200 hectares) including none of the existing and proposed PAs, 6,143 ha in OGMAs, or 18% of all plan area OGMAs, and 7,057 ha in FEN hydriparian zones, or 30% of all plan area FEN hydriparian zones; together these represent 16% of the Gamlakyeltxw house territory landbase overlapping the Nass South SRMP area;
- has 19 km of the 118 km of trails identified as being of cultural significance to the Gitanyow, 8 of the 16 currently identified Gitanyow traditional use sites and 6 of the 16 archaeological sites;
- has limited identified mineral potential; and
- is almost entirely in the Bowser Basin, but as noted for the entire Nass South SRMP area, the gas potential for that Bowser Basin area is moderate at between 20,001 and 40,000 m³ of potential gas reserves per hectare (see Section 2.4 on the Energy Sector)).

Haitsimsxw House Territory

The Haitsimsxw house territory covers 7,813 hectares on the eastern boundary of the Nass South SRMP area, or 1% of the total plan area. Some 4,403 hectares of the house territory in the Nass South SRMP area overlaps with the Swan Lake Kispiox River Provincial Park. The balance or 3,410 hectares represent 0.5% of the Nass South SRMP, and includes 2,538 hectares (or 1.9%) of plan area THLB.

Malii/Axwindesxw House Territory

Key features of the Malii/Axwindesxw house territory are as follows:

- covers 30,441 hectares of the Nass South SRMP area, or 5% of the total plan area;
- includes 12,649 hectares of THLB (9% of plan area total and 42% of the Malii/Axwindesxw house territory landbase overlapping the Nass South SRMP area);
- includes 9% of the mushroom harvesting/ management areas identified for the Nass South SRMP area;
- includes 9% of the Nass South SRMP high value grizzly bear habitat, none of the moose winter range and 1% of the mountain goat winter range;
- includes 5% of the proposed no-timber harvest areas in the plan area (4,161 hectares) including: none of the existing and proposed PAs; 3,015 ha in OGMAs (9% of all plan area OGMAs); and 1,146 ha of FEN hydriparian zones (5% of all plan area FEN hydriparian zones); together these represent 14% of the Malii/Axwindesxw house territory landbase overlapping the Nass South SRMP area;

- has none of the Gitanyow cultural value features included in the GIS analysis for this study, including km of trails, traditional use sites and archaeological sites;
- is entirely in the Bowser Basin, but as noted for the entire Nass South SRMP area, the gas potential for that Bowser Basin area is moderate at between 20,001 and 40,000 m³ of potential gas reserves per hectare (see Section 2.4 on the Energy Sector)); and
- has limited identified mineral potential.

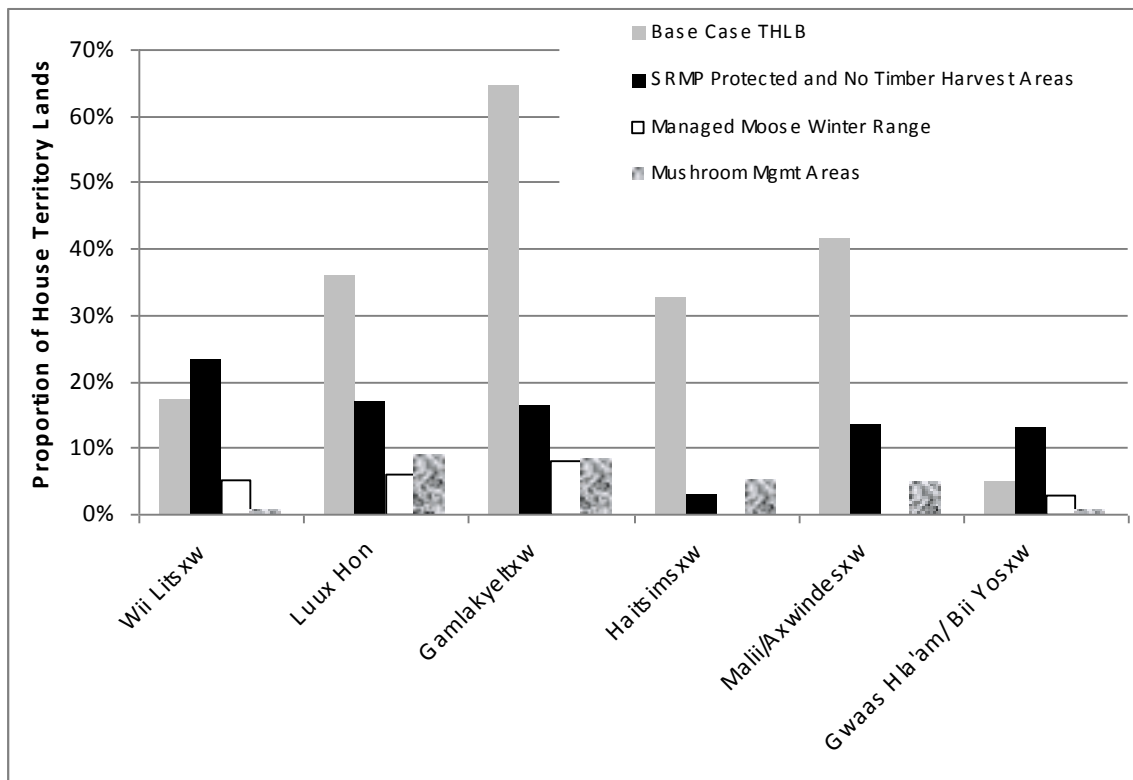
Gwaas Hla'am/ Bii Yosxw House Territory

Key features of the Gwaas Hla'am/ Bii Yosxw house territory are as follows:

- covers 47,887 hectares of the Nass South SRMP, or 7% of the total plan area;
- includes only 2,402 hectares of THLB (2% of the plan area total and 5% of the Gwaas Hla'am/ Bii Yosxw house territory landbase overlapping the Nass South SRMP area);
- includes 4% of the Nass South SRMP area high value grizzly bear habitat, 7% of the moose winter range and 2% of the mountain goat winter range;
- includes 7% of the proposed no-timber harvest areas (6,182 hectares) including: none of the existing and proposed PAs; 3,725 ha in OGMAs (11% of all plan area OGMAs); and 2,457 ha of FEN hydriparian zones (10% of all plan area FEN hydriparian zones); together these represent 13% of the Gwaas Hla'am/ Bii Yosxw house territory landbase overlapping the Nass South SRMP area;
- has only 4 km of the 118 km of trails identified as being of cultural significance to the Gitanyow, none of the currently identified traditional use sites and none of the identified archaeological sites;
- has 19% of its landbase in the Bowser Basin, but as noted for the entire Nass South SRMP area, the gas potential in that Bowser Basin area is moderate at between 20,001 and 40,000 m³ of potential gas reserves per hectare (see Section 2.4 on the Energy Sector)); and
- has 35,581 hectares of mineral tenures or 11% of all mineral tenures in the Nass South SRMP area.

The following graph presents, for each Gitanyow house territory, the percentage of THLB, Nass South SRMP protected and no-timber harvesting areas, managed moose winter range and mushroom management areas that overlap the Nass South SRMP area.

Chart 22 Selected GIS Data for Gitanyow House Territories Overlapping Plan Area



Note: Includes only the portion of each house territory that is within the Nass South SRMP area.

Summary of Nass South SRMP Impacts on the Gitanyow Community

The Nass South SRMP area has a wide array of natural resources with socio-economic implications for various sectors such as forestry, mining, tourism, recreation, commercial fishing, botanical products, etc. While the First Nations and non-First Nations communities in the primary impact area depend on the same land based resources, the Gitanyow people have an additional strong attachment to their traditional land base, which provides the cultural, spiritual and economic foundation of Gitanyow society.

Six Gitanyow Wilp (House Territories) are located entirely or partially in the plan area, and cover 390,925 hectares, or approximately 59% of the Nass South SRMP area.

The Nass South SRMP is expected to significantly benefit the Gitanyow community and individual house territories. Key elements that will particularly benefit the Gitanyow community are summarized as follows:

- The proposed Hanna-Tintina PA encompasses 24,262 ha, all in the Wii Litsxw house territory, and includes 22 km of culturally significant trails, some 1,404 ha of high value grizzly habitat, 1,376 ha of moose winter range and an extensive network of creeks draining into Meziadin Lake, which are crucial to the Nass River fishery system.
- 88% of all no timber harvest areas in the Nass South SRMP (through either PAs, OGMAs or FEN hydroriparian zones) are in Gitanyow house territories.

- No timber harvest areas include 38 km of trails that are culturally important to the Gitanyow (33% of a total of 118 km), 11 identified traditional use sites (75% of a total of 16 sites), and 7 identified archaeological sites (44% of total of 16 sites). A separate database not included in the GIS analysis identifies some 40 traditional use sites in the Wii Litsxw house territory, which includes 44% of the plan area's proposed no-timber harvest areas.
- 74% of all OGMAs in the Nass South SRMP are in Gitanyow house territories, protecting old growth forests and associated values; across individual house territories, OGMAs cover a low of 3.6% of the Wii Litsxw house territory and a high of 9.9% of the Malii/Axwindesxw house territory, or an average of 6.3% of house territory lands within the plan area.
- The Nass South SRMP provides for identification and protection of high value grizzly bear habitat, moose winter range and mountain goat winter range; this is particularly significant in the Gitanyow house territories which include 98% of the plan area's high value grizzly habitat, and 97% of the plan area moose winter range.
- The Nass South SRMP provides for greater protection of fish habitat through the preservation of riparian areas, water quality and water quantity.
- The plan provides for identification and preservation of pine mushroom harvesting areas, with Gitanyow house territories accounting for 87% of all mushroom harvesting/ management areas identified in the Nass South SRMP.
- Management objectives to preserve cultural sites and cultural heritage resources will add to existing legislation to sustain Gitanyow cultural resources.

5 Nisga'a Community

There are four Nisga'a communities that are outside the Nass South SRMP area but are between 50 km and 138 km of Cranberry Junction (based on the distance using the 4-wheel drive access road between Cranberry Junction and New Aiyansh). Population for these 4 Nisga'a communities is approximately 2,200 people (2006) sharing approximately 600 private dwellings.

Table 20 Population and Private Dwellings for Nisga'a Communities

Population for Nisga'a Communities Near Nass South SRMP Area	Population - Total Community Residency (from Skeena Native Development Society Data)			
	1997	2000	2006	% Change 1996-2006
Gingolx (Kincolith)	458	342	400	-13%
Laxgalts'ap (Greenville)	655	614	592	-10%
Gitwinksihlkw	243	252	242	0%
New Aiyansh	915	1,070	952	4%
Sub-Total - Nisga'a Communities:	2,271	2,278	2,186	-4%

Note: The population based on Census data for all 4 communities for 2006 are slightly lower at 1,919 people.

Number of Private Dwellings in Nisga'a Communities Near Nass South SRMP Area	2006 Private Dwellings (Canada Census Data)		
	Total Dwellings	Dwellings Occupied by Usual Residents	% of Occupied Dwellings
Gingolx (Kincolith)	114	103	90%
Laxgalts'ap (Greenville)	132	131	99%
Gitwinksihlkw	58	57	98%
New Aiyansh	254	237	93%
Nass Camp (Other Nisga'a)	45	45	100%
Sub-Total - Nisga'a Communities:	603	573	95%

Source: Skeena Native Development Society, Labour Market Census, various years, accessed through web site: www.snds.bc.ca; and Canada Census.

BC Stats estimates that the public sector accounts for 41% of basic after tax income, followed by transfer payments (22%), other non-employment income (5%), forestry (9%), mining (7%), tourism (5%) and fish and trapping (3%).⁶⁹ Other basic sectors account for the remaining 8%. Percent income dependencies by sector are based on data for the Stewart and Nisga'a Local Area as data for only the Nisga'a communities are not available. The population for Stewart is approximately 500 people compared to approximately 2,200 for the Nisga'a communities.

As described in the Nass South SRMP, the Nisga'a Nation, Canada and British Columbia entered into the Nisga'a Final Agreement on May 11, 2000. According to the Nass South SRMP, the Nisga'a interests in the Nass South SRMP include:

- specific properties owned in fee simple at: Meziadin Lake, T'aam Mits'iaadin, Meziadin Junction, Kinskuch Lake - T'aam Ginsgox, Jade Lake, Grizzly Bear Lake and Sgamagunt;
- commercial recreation tenure areas at: Kinskuch - T'aam Ginsgox, Jade and Niska Lakes;

⁶⁹ Horne, Dr. Garry, BC Stats, 2004, BC's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas. For further detail, see Appendix 5.

- a guide outfitter area;
- specific angling guide license streams at: Nass River - K'alii Aksim Lisims, Kinskuch River - Ksi Ginsgox, Meziadin River, Bowser River, and Bell Irving River;
- rights to harvest fish, and aquatic life, and rights of access within the Nass Area; and
- rights to harvest wildlife and migratory birds, and rights of access in the Nass Wildlife Area.⁷⁰

This section of the report provides an overview of the expected impacts of the Nass South SRMP on Nisga'a interests in the Nass South SRMP area.

The following table shows that 74% of the Nass South SRMP area overlaps with the Nass Wildlife Area. As a result of the Nass South SRMP, some 16.4% of the Nass Wildlife Area within the Nass South SRMP area will be in no timber harvesting zones.

Table 21 Nass Wildlife Area by Nass South SRMP Management Zone

Nass South SRMP Area Statistics	Total Area		Nass Wildlife Management Area	
	hectares	%	hectares	%
Private Lands	1,564	0.2%	558	0.1%
Federal Lands and I.R.	271	0.0%	270	0.1%
Existing Parks and Protected Areas	5,203	0.8%	5,052	1.0%
Hanna Tintina Protected Area	24,262	3.7%	23,222	4.7%
OGMAs	33,337	5.0%	30,498	6.2%
FEN Zones (Excluding OGMA or PA areas)	23,502	3.5%	21,054	4.3%
Sub-Total	88,139	13.3%	80,653	16.4%
General Mgmt Areas	574,371	86.7%	412,134	83.6%
Total	662,509	100%	492,787	100%
% of Total Nass South SRMP Area			74.4%	

The Nass South SRMP is likely to provide overall benefits to the Nisga'a communities.

- The Hanna-Tintina protected area, OGMAs and FEN hydroriparian zones will likely benefit Nisga'a wildlife, fisheries and ecological values.
- Greater protection of riparian areas through FEN hydroriparian zones will likely benefit fish habitat and Nisga'a fisheries resources. As noted in Section 2.6.3 on commercial fishing, within the Nass South SRMP area, Meziadin Lake and its major tributaries, Hanna, Tintina and Surprise Creeks account for up to 80% of the total Nass sockeye assessment, which is particularly significant to the Nisga'a. FEN hydroriparian zones surround much of Meziadin Lake and some of its tributaries including Hanna Creek and Tintina Creek. Moreover, some of the FEN hydroriparian zones preserve riparian habitat on rivers on which the Nisga'a hold specific angling guide licences such as the Nass River.
- Specific management of moose winter range, and the high percentage of moose winter range

⁷⁰ Source: Nass South SRMP; and BC Ministry of Aboriginal Relations and Reconciliation, *Nisga'a Final Agreement In Principle - In Brief*, from website: <http://www.gov.bc.ca/arr/firstnation/nisgaa/archive/aip/inbrief.html#wild>

(47%) in no timber harvesting areas will likely help preserve the moose population.

- Specific management of high value grizzly bear habitat, and the high percentage of high value grizzly habitat (32%) in no timber harvesting areas will likely help preserve grizzly bear populations.
- The Nisga'a commercial recreation tenures will likely benefit from the OGMAs and FEN hydrosiparian zones, particularly those in the vicinity of Jade Lake and Niska Lakes.

6 Summary and Conclusions

The following table summarizes the base case economic parameters and the expected socio-economic impacts of the SRMP.

Table 22 Summary of Impacts by Industry Sector and Communities

Key Highlights	Nass South SRMP Socio-Economic Base Case	Likely Impacts of Nass South SRMP
Key Elements of the Plan	<p>Key elements of Base Case management that continue under Nass South SRMP include:</p> <ul style="list-style-type: none"> Existing Protected Areas (PA): 0.8% of land base or 5,203 hectares (ha) including Bear Glacier Park, Meziadin Lake Park and a small portion of Swan Lake-Kispiox River Park. A Use, Recreation, Enjoyment of the Public (UREP) area along the Bear River and surrounding Bear Glacier, Entrance Peak and Strohn Lake (4,000 gross hectares excluded from timber harvesting). 70,460 ha of land (10.6% of total area) which is managed for specific Visual Quality Objectives (VQO). Legal requirements for managing water quality, fish habitat and other ecological values in accordance with the <i>Forest and Range Practices Act</i>, <i>Forest Planning and Practices Regulation</i> and the <i>Fisheries Act</i>. Protection of archaeological sites. 	<ul style="list-style-type: none"> Proposed new Hanna-Tintina Protected Area: 24,262 hectares (3.7% of plan area); Spatial Deployment of Old Growth Management Areas (OGMAs): a further 5.0% or 33,337 hectares, which will be excluded from timber harvest. A Forest Ecosystem Network (FEN), consisting of hydroriparian zones bordering several identified water bodies in which industrial timber harvesting would not be permitted. These FEN zones cover an additional 23,500 hectares (not including overlaps with OGMAs or Hanna-Tintina) or 3.5% of the plan area, based on areas defined as "FEN core" areas in the July 2008 GIS data prepared by BC MAL for this socio-economic assessment. Specific areas managed for other values including high value grizzly habitat areas, moose and mountain goat winter range, pine mushroom harvesting areas, etc.
Forestry: Current Conditions - Timber Harvest Volume	<ul style="list-style-type: none"> AAC for Nass TSA is 665,000 m3 for the Lower Nass and 200,000 m3 for the Upper Nass The past 4 year average harvest in the Nass TSA of 164,000 m3 is approximately 25% of the current AAC of 665,000 m3 (not including the Upper Nass partition of 200,000 m3). Current harvest levels are constrained primarily by markets for low grade (pulp) logs and hembal sawlogs. 2007 timber harvest was 166,500 m3 Timber supply modelling for the Nass South SRMP process⁷¹ indicates short term timber supply of 557,400 m3 per annum from forests within the Nass South SRMP area boundaries (84% of AAC for the Lower Nass). 	<ul style="list-style-type: none"> The Nass South SRMP will provide benefits to the forest sector in the form of greater land use certainty, faster approval of forestry plans, support for product certification initiatives, and improved communication lines with First Nations and other forest land users. Projected timber supply impacts from the Nass South SRMP indicate a decline in short term timber supply of 94,657 m3 per annum (assuming harvest the full AAC), a 17% decline from the Base Case scenario for the Nass South SRMP area, which implies a 14.2% decline for the Lower Nass TSA area (the Nass South SRMP area contributes approximately 84% of the AAC for the Lower Nass TSA). There may be additional impacts from the Nass South SRMP on timber harvesting in the plan area. If the areas being removed from the THLB, or facing more restrictive harvesting management, are concentrated on lands where timber harvesting opportunities are most economically feasible, a disproportionate impact on current activity levels could result. Also, if some of the management objectives result in higher timber harvesting costs, economic operability may be further diminished, leading to lower levels of harvesting activity.
Long Term Harvest Levels	<ul style="list-style-type: none"> Long term sustainable harvest (LTSH) level modelled in TSR2 Base Case projection of 407,000 m3 to be reached in Decade 7 (excluding Upper Nass partition). Timber supply modelling for the Nass South SRMP process indicates long term timber supply of 290,000 m3 per annum from forests within the Nass South SRMP area boundaries. 	<ul style="list-style-type: none"> Timber supply modelling indicates that in Decade 7, the Long Term Sustainable Harvest (LTSH) in the plan area under Nass South SRMP management would be 49,250 m3 less than the Base Case level of 290,224 m3, a 17% decline in LTSA for the plan area, and a 12.1% decline when applied to the LTSH for the entire Lower Nass of 407,000 m3.

⁷¹ Industrial Forestry Service LTD., South Nass SRMP Timber Supply Analysis Report and Package, Version 1, May 2008, Pg. 2

Key Highlights	Nass South SRMP Socio-Economic Base Case	Likely Impacts of Nass South SRMP
Person Years (PY) of Employment (Current & Potential)	<ul style="list-style-type: none"> Direct employment from Nass TSA timber harvest is 20 PYs in Nass South SRMP area (mainly Stewart), 56 PYs in rest of primary impact area (mainly Terrace), and 32 PYs elsewhere in BC (mainly pulp and paper mills elsewhere in BC). Loss of very substantial regional processing capacity in both sawmilling and pulp production, with the closure of Skeena Cellulose operations, appears unlikely to be replaced. May be some opportunity for smaller scale operations targeting niche markets. 	<ul style="list-style-type: none"> Assuming an impact on current harvesting activity that is proportional to the projected decline in timber supply attributable to Nass South SRMP management direction, in the short term, 3 direct jobs (PYs) would be at risk in the plan area, and another 8 direct jobs (PYs) would be at risk elsewhere in the primary impact area. Including direct jobs at risk elsewhere in BC (mostly due to reduced wood product and pulp and paper manufacturing activity) a total of 15 direct jobs (PYs) may be at risk in the province. If timber markets were to improve over the next decade to the point where the full Nass TSA AAC could be economically harvested, then impacts of the reductions in timber supply resulting from the Nass South SRMP may become more significant. The foregone potential harvesting activity could result in up to 11 fewer direct plan area PYs, another 32 fewer direct primary impact area PYs outside the plan area, and a provincial total of 62 fewer direct PYs, than under basecase management. This type of calculation ignores the potential timber harvesting activity benefits derived from reduced friction between harvesting licensees and local communities provided by the SRMP.
Forest Sector – Stumpage and Net Economic Value	<ul style="list-style-type: none"> 2006 stumpage: \$946,000 (\$5.77 per m3) down from 3-year average of \$1.2 million and only a fraction of \$14.9 million (\$2006) collected in 1995 Moreover, current stumpage of \$1.2 million average in last three years is before any allowance for silviculture and road building in respect of BCTS, thereby resulting in an estimated average stumpage rate net of silviculture and other costs of \$2.00 per m3. Net economic value estimated at \$3.80 per m3 of timber harvested, or \$0.6 million per year 	<ul style="list-style-type: none"> Following the logic used to estimate employment impacts, the Nass South SRMP may result in a drop in timber harvest of 23,360 m3 in the short term, which would result in a \$46,720 loss in annual stumpage revenues. Assuming the full Nass TSA AAC could be harvested in the medium term, the loss in stumpage revenue resulting from the Nass South SRMP could be \$189,314, and likely significantly higher as market conditions that would allow harvest of the full AAC would likely also result in higher average stumpage rates.
Mining	<ul style="list-style-type: none"> 16% of after-tax income for Nass South SRMP area (mainly Stewart and for 2001 – may have increased since) No operating mines nearby but past producers include Granduc mine which employed 750 people and operated between 1971 and 1978, and between 1981 and 1984. Very high metallic mineral potential on 47% of landbase, primarily near Stewart and throughout the western portion of the Nass South SRMP area Potential for new mines is relatively high (area accounts for 1.3% of BC's exploration expenditures and 3.2% of mineral occurrences, but only 0.7% of BC landbase) 	<ul style="list-style-type: none"> The Nass South SRMP does not establish any management objectives specific to mining other than affirming support for two-zone system. No impact on existing jobs. Hanna-Tintina PA increases total PAs from 0.8% of the landbase under the Base Case to 4.5% of the total landbase; the balance, or 95.5% remains accessible to mining. In the proposed Hanna-Tintina, there are no recorded metallic mineral occurrences and no exploration expenditures recorded in the MEMPR ARIS database. Some recently acquired mineral tenures overlap the proposed Hanna-Tintina PA by 1,417 hectares. No mining activity would be permitted within the Hanna-Tintina PA.
Energy	<ul style="list-style-type: none"> No known coal deposits, coal leases or coal applications No significant petroleum exploration, although half of Nass South SRMP area has moderate oil and gas potential (part of Bowser Basin) Some rivers may be suitable for small hydro-electric power generation projects Proposed 335 km Northwest Transmission Line between Terrace and Bob Quinn Lake north of the Nass South SRMP area would improve power capacity and extend the power grid north of its current terminus at Meziadin Lake. 	<ul style="list-style-type: none"> Hanna-Tintina PA is within the Bowser Basin and as a result, some 7% of the plan area's moderate gas potential lands would be unavailable for commercial development. The proposed route of the Northwest Transmission Line runs parallel to Highway 37 through the proposed Hanna-Tintina protected area. The Nass South SRMP recommends that a corridor be established through the Hanna-Tintina protected area specifically to accommodate this transmission line.
Botanical Forest Products: Pine Mushrooms	<ul style="list-style-type: none"> Pine mushrooms are harvested commercially throughout the Nass Valley Pine mushroom harvest from Nass South may be approximately 40,000 kg (average for a good year, likely much lower in recent years due to low prices). 	<ul style="list-style-type: none"> The Nass South SRMP will likely benefit pine mushroom harvesting through specific management of 17,571 hectares of pine mushroom habitat. In addition, under the Nass South SRMP, 12.6% of pine mushroom harvesting management areas would be in areas where timber harvesting is not permitted.

Key Highlights	Nass South SRMP Socio-Economic Base Case	Likely Impacts of Nass South SRMP
	<ul style="list-style-type: none"> 40,000 kg may yield \$1.8 million in industry revenues, of which \$1.3 million accrues to harvesters (possibly approx. 500 pickers each earning \$2,600 per year, or 50-60 PYs) Net economic value estimated at \$0.156 million per year based on 40,000 kg harvest. 	
Commercial Fishing	<ul style="list-style-type: none"> Very important to First Nations, quite aside from profound cultural and sustenance significance of Nass Valley salmon fishery. Nass South SRMP area is part of Nass Watershed which supports the provincially significant Nass salmon fishery. Within the Nass South SRMP, Meziadin Lake and its major tributaries account for up to 80% of total Nass sockeye assessment. Commercial fishing generates employment for 65 people residing in the Nisga'a villages and 8 people residing in the Gitanyow/ Gitxsan villages. The Gitanyow harvest approximately 6,000 sockeye, a few hundred chum and a few hundred coho salmon per year for community use. 	<ul style="list-style-type: none"> The Nass South SRMP establishes some specific management direction to enhance water quantity and quality as well as protect fish habitat through the protection of riparian areas. Under the Nass South SRMP, riparian areas will particularly benefit through the preservation of FEN hydriparian areas, which will see no timber harvesting. The Nass South SRMP also establishes Water Management Units with specific management direction to help protect water quality, quantity and stream flow patterns.
Front Country Tourism	<ul style="list-style-type: none"> There is significant tourism activity in Stewart and in communities surrounding the Nass South SRMP area. In winter, approximately 125 cars per day travel on Highway 37A between Stewart and Meziadin Junction, and in summer approximately 615 vehicles per day travel that same road. Key activities: Bear Glacier, communities of Stewart-Hyder (Alaska), cultural First Nations village sites (including Gitanyow, Kispiox, Ksan Village, and Nisga'a villages), Nisga'a Memorial Lava Bed Provincial Park, Seven Sisters Peak Provincial Park, Swan Lake Upper Kispiox River Provincial Park, Meziadin Provincial Park. 	<ul style="list-style-type: none"> The Nass South SRMP area has features that are important to the tourism and recreation sectors. Key activities in the Nass South SRMP area include sportfishing (Meziadin Lake and other rivers & lakes); hunting, particularly for BC residents and First Nations; heli-skiing, snowmobiling, backcountry skiing and hiking, and canoeing/kayaking along the various canoe routes such as the Bonney Lakes Canoe Route and the Swan Lake Upper Kispiox River Provincial Park. Although there is no specific management direction in the plan for tourism and recreation, the Nass South SRMP will likely benefit the tourism and recreation sectors through new protected areas, no-timber harvesting areas and management guidelines that offer greater preservation of fish, wildlife, ecological and cultural values.
Backcountry Tourism and Recreation		
Guide-Outfitting	<ul style="list-style-type: none"> 2 Guide Outfitters operate partially in Nass South SRMP area, one is based in Terrace, the other in Smithers Based on WLAP hunting statistics and average impact per level of effort, the Nass South SRMP area accounts for minimal tourism revenues from guide-outfitting (net economic value estimated at \$5,000). 	<ul style="list-style-type: none"> The Nass South SRMP will provide somewhat greater land use certainty and operational certainty for tourism service providers.
Sportfishing	<ul style="list-style-type: none"> Meziadin Lake is the main fishing lake in the Nass South SRMP, and features a number of sport fisheries. Sportfishing also takes place in numerous rivers in the Nass South area including Meziadin River, Nass River, Kwinageese River (steelhead fishery and classified water), and many others. Bell 2 Lodge, one of the largest sportfishing lodges in the BC Northwest, is located near the northern boundary of the Nass South SRMP, and a small portion of the associated guided fishing takes place in the Nass South SRMP area. 	<ul style="list-style-type: none"> The Nass South SRMP will provide greater protection of fish habitat through the preservation of riparian areas, water quality and water quantity.
Heli-Skiing	<ul style="list-style-type: none"> Last Frontier Heli-Skiing's tenure encompasses much of the northwestern part of the Nass South SRMP area; during peak operations, Last Frontier Heli-Skiing generates employment for approximately 35 people (including guides, assistants, and contractors for lodge operations). 	<ul style="list-style-type: none"> The Nass South SRMP will provide somewhat greater land use certainty and operational certainty for tourism service providers. The Hanna-Tintina PA overlaps the commercial heli-skiing tenure by 9,126 hectares, but the Nass South SRMP specifically recommends heli-skiing as an acceptable use in the proposed PA.
Hunting by BC	<ul style="list-style-type: none"> The Nass South SRMP area is an important sport hunting area for black 	<ul style="list-style-type: none"> The Nass South SRMP will enhance wildlife habitat preservation with species specific

Key Highlights	Nass South SRMP Socio-Economic Base Case	Likely Impacts of Nass South SRMP
Gitanyow Communities	<ul style="list-style-type: none"> • Six Gitanyow Wilp (House Territories) are located entirely or partially in the plan area, and cover 59% of the Nass South SRMP area (390,925 hectares). • The community of Gitanyow, also known as Kitwancool, is located approximately 45 km south of the southern boundary of the Nass South SRMP area. • Approx. 420 people reside in Gitanyow (2006) • Band membership is approximately 700 people (2006) • The Nass South SRMP area provides 63% of the total traditional Gitanyow landbase for fishing, hunting, trapping, food gathering, medicinal plant gathering and timber harvesting. 	<p>The Nass South SRMP will likely benefit the Gitanyow territories and community. Key elements that will particularly benefit the Gitanyow community are summarized as follows:</p> <ul style="list-style-type: none"> • The proposed Hanna-Tintina PA encompasses 24,262 ha, all in the Wii Litsxw house territory, and includes 22 km of culturally significant trails, some 1,404 ha of high value grizzly habitat, 1,376 ha of moose winter range and an extensive network of creeks draining into Meziadin Lake, which are crucial to the Nass River fishery system. • 88% of all no timber harvest areas in the Nass South SRMP (through either PAs, OGMAs or FEN hydriparian zones) are in Gitanyow house territories. • No timber harvest areas include 38 km of trails that are culturally important to the Gitanyow (33% of a total of 118 km), 11 identified traditional use sites (75% of a total of 16 sites), and 7 identified archaeological sites (44% of total of 16 sites). A separate data base not included in the GIS analysis identifies some 40 traditional use sites in the Wii Litsxw house territory, which includes 44% of the plan area's proposed no-timber harvest areas. • 74% of all OGMAs in the Nass South SRMP are in Gitanyow house territories, protecting old growth forests and associated values; across individual house territories, OGMAs cover a low of 3.6% of the Wii Litsxw house territory and a high of 9.9% of the Malii/Axwindexw house territory, or an average of 6.3% of all house territory lands within the plan area. • The Nass South SRMP provides for identification and protection of high value grizzly bear habitat, moose winter range and mountain goat winter range; this is particularly significant in the Gitanyow house territories which include 98% of the plan area's high value grizzly habitat, and 97% of the plan area moose winter range. • The Nass South SRMP provides for greater protection of fish habitat through the preservation of riparian areas, water quality and water quantity.
Nisga'a Specific Use	<ul style="list-style-type: none"> • The Nass Wildlife Area covers 74% of Nass South SRMP area • Within the Nass South SRMP area, Meziadin Lake and its major tributaries, Hanna, Tintina and Surprise Creeks account for 80% of the total Nass sockeye assessment, which is particularly significant to the Nisga'a. 	<p>The Nass South SRMP is likely to provide overall benefit to the Nisga'a communities.</p> <ul style="list-style-type: none"> • The Hanna-Tintina PA, OGMAs and FEN hydriparian zones will likely benefit Nisga'a wildlife, fisheries and ecological values. • Greater protection of riparian areas through FEN hydriparian zones will likely benefit fish habitat and Nisga'a fisheries resources. FEN hydriparian zones surround much of Meziadin Lake and some of its tributaries including Hanna Creek and Tintina Creek. Moreover, some of the FEN hydriparian zones preserve riparian habitat on rivers on which the Nisga'a hold specific angling guide licences such as the Nass River. • Specific management of moose winter range, and the high percentage of moose winter range (47%) in no timber harvesting areas will likely help preserve the moose population. • Specific management of high value grizzly bear habitat, and the high percentage of high value grizzly habitat (32%) in no timber harvesting areas will likely help preserve grizzly bear populations. • The Nisga'a commercial recreation tenures will likely benefit from the OGMAs and FEN hydriparian zones, particularly those in the vicinity of Jade Lake and Niska Lakes.

APPENDIX 1 FORESTRY

This Appendix provides detailed data on the forest sector impacts in the Nass TSA. This includes the following tables:

- Table 23 and 24 provide data on fibre flows for the Nass South SRMP area.
- Tables 25 and 26 provide data on forest exports from the Nass Timber Supply Area and from the BC Northern Transition Zone.
- Tables 27 through 30 provide data on employment and other socio-economic impacts from timber harvesting in the Nass South SRMP area.
- Table 31 provides data on the historical harvest and stumpage revenues from the Nass TSA and other BC Northwest regions.

Table 23 *Estimated Fibre Flow from Nass South SRMP Area, 2006*

Estimated Annual Average Fibre Flow from Nass South SRMP Area	Estimated Fibreflow (%)	Estimated 2006 Volume (000 m3)
% of Logs Exported	40%	65,646
% of Logs Processed in:		
Nass South SRMP Area	0%	0
West Fraser Mills in Terrace	5%	8,206
Other Pacific Northwest Mills	5%	8,206
Southern BC Coast (mainly chippers/ woodrooms and pulp & paper mills)	50%	82,057
Total	100%	164,114

Note: The % of log exports is based on the 6 year average from 2001 through 2006; the estimated export volume is based on that 6 year average.

Source:

- Total Harvest, 2006: based on MOFR data, see notes to Table 13.
- Other Data: Pierce Lefebvre Consulting based on discussions with industry representatives, confidential data collected as part of this study, and publicly available data.

Table 24 *West Fraser Sawmills Supplying Chips to Eurocan P & P Mill*

West Fraser Sawmills Supplying Chips to Eurocan Pulp & Paper Mill	2006 Production (mmfbm)	2006 Approximate Number of Employees in Nass Impact Area
Lumber Production in Mills Near Nass South SRMP:		
Smithers	309	100
Fraser Lake	334	
Terrace	92	
Houston	358	
Total	1,093	
Eurocan Pulp and Paper	459,000 Metric tonnes of linerboard and kraft paper	550

Note: The number of employees in Terrace includes 80 hourly mill employees and 20 salaried staff including mill administration, woodlands and other. The Terrace sawmill has been temporarily shutdown since October 2007.

Source: West Fraser Timber Co. Ltd., Annual Report, 2006.

Table 25 Exports from Nass Timber Supply Area

Log Export from Nass TSA, 1996 - 2006	Log Exports	Total Log Harvest	Log Exports as a % of Harvest
1996	213,756	616,139	35%
1997	41,052	467,185	9%
1998	60,987	533,343	11%
1999	116,543	712,343	16%
2000	83,987	603,713	14%
2001	63,675	322,156	20%
2002	82,402	261,485	32%
2003	95,639	181,533	53%
2004	100,740	221,393	46%
2005	97,545	105,984	92%
2006	76,469	164,114	47%
Average 2002 - 2006 (5 Years)	90,559	186,902	48%
Average 2001 - 2006 (6 Years)	86,078	209,444	41%
Average 1996-2006 (11 Years)	93,890	380,853	25%

Notes:

Export volumes and harvest volumes will not match on an annual basis due to differing reporting periods.

Pulplogs include all logs graded as #4 and #5 logs.

Source: Export Data: BC Ministry of Forests and Range, pers. comm. Doreen Zelisney (MOFR), May 31st, 2007.

Table 26 Exports from BC Northern Transition Zone Relative to Timber Harvest

Exports from BC Northern Transition Zone Relative to Timber Harvest	Exports from Northern Transition Zone
Log Exports from Northern Transition Zone (FY Ending March 31 2006)	(000 m3)
USA	53,774
Japan	135,320
Korea	46,639
China	44,109
Taiwan	0
Other	0
Log Exports from Northern Transition Zone	279,842
Northwest Region Timber Harvest 2006 (Calendar Year) from Provincial Crown Lands (MOFR)	
Nass TSA	164,114
Other Kalum Forest District	629,743
Total Kalum Forest District	793,857
Cassiar, Kispiox & Cranberry	300,642
North Coast	174,737
Timber Harvest Northwest Region	1,269,236
Total Harvest - Northern Transition Zone	2,104,165
Export as a % of Northwest Region	22%
Export as a % of Northern Transition Zone	13%

Notes:

1. The Northern Transition Zone is defined to include TFLs 1 and 41, the Nass, Kalum, Kispiox, and Cranberry TSAs. (Dumont, Bill and Don Wright, page 16).
2. The Northwest Region includes the Northern Transition Zone as well as the North Coast Forest District and the Cassiar TSA.
3. The harvest for the Northern Transition Zone is reported as 2.1 million m3 for the fiscal year ending March 31, 2006. (Dumont, Bill and Don Wright, page 99). This is much higher than timber production reported by the MOFR billing system. This harvest may include more regions than what we define as the Northwest Region, and would include harvest from private lands, federal lands, as well as provincial lands.
4. Exports from the Northern Transition Zone of 279,842 m3 all originate from provincial crown lands. (Dumont, Bill and Don Wright, page 99).

5. Export logs are infrequently transported more than 200 km by truck. This means that most exports from the Northern Transition Zone are likely from what we call the Northwest Region.
6. In BC, sawlog exports account for 99% of all BC log exports. For the fiscal year ending March 31, 2006, only 18,178 m3 of coniferous pulpwood exports were exported from BC, or 0.4% of the 4.8 million m3 exported that year.

Source:

MOFR EMS data as reported in: Dumont, Bill and Don Wright, *Generating More Wealth from British Columbia's Timber: A Review of British Columbia's Log Export Policies*, A report to British Columbia Minister of Forests and Range, December 2006, 100 pages.

Table 27 *Estimated Forest Industry Coefficients for the Nass South SRMP, 2006*

Estimated Harvesting & Silviculture Employment Coefficient (PYs per 000 m3) for the Nass South SRMP Area	2006 Estimate	TSR-2 (2001)	# of Jobs - 2006 Estimate
Harvesting/ Falling	0.279		46
Planning & Administration	0.041		7
Log hauling / trucking	0.000		0
Barging / towing	0.042		7
Road Building	0.000		0
Silviculture	0.038		6
Other	0.000		0
Total	0.399	0.360	65
Processing	0.257	0.470	42
Total Direct	0.656	0.830	108

Estimated Processing PYs per m3 Harvested in Nass TSA and Processed in BC (2006)	Estimated PYs of Direct Employment	per 000 m3 of Total Harvest (Processed in BC and Exported)
PYs in Nass South SRMP	0	0.000
PYs in Wood Processing	6.5	0.040
PYs in Northwest Pulp and Paper	<u>3.5</u>	<u>0.021</u>
Sub-Total	10.0	0.061
PYs at Chipping Plants - Southern BC	2.5	0.015
Pulp and Paper PYs in Southern BC	<u>29.7</u>	<u>0.181</u>
Total	42.1	0.257
2006 Harvest		164,114 m3
Estimated 2006 Volume Processed in BC		98,468 m3

Source:

- TSR-2 (2001): BC Ministry of Forests, 2001, *Timber Supply Review, Nass Timber Supply Area Analysis Report*.
- Other: Pierce Lefebvre Consulting based on discussions with industry representatives, confidential data collected as part of this study, and publicly available data.

Table 28 *Net Economic Value for Nass South SRMP Area*

Net Economic Value for Nass South SRMP Area	Assumptions	\$ Million	\$ per m3
Public Sector Rent	\$2.00 per m3	\$0.33	\$2.00
Labour Rent	5 % of direct wages and salaries in BC	\$0.29	\$1.79
Industry Rent	Minimal	Minimal	Minimal
TOTAL NET ECONOMIC VALUE		\$0.62	\$3.79

Notes:

1. Public sector rent is estimated at \$2.00 per m3. While average stumpage rates on BC Timber Sales for the Nass South SRMP area average approximately \$15 per m3, this is without deduction for silviculture and road building costs.
2. Labour rent is based on estimated income levels shown in Table 29.

Table 29 Estimated Employment Impacts from Timber Harvesting in Nass South SRMP

Estimated 2006 Employment Impacts from Nass South SRMP	Nass South Area Employment from Nass South TSA		Primary Impact Area Employment from Nass South SRMP (Incl. Nass)		BC Employment from Nass South SRMP		Est. B.C. Before-Tax Empl. Income (2006 \$millions)
	PYs per 000 m3	PYs	PYs per 000 m3	PYs	PYs per 000 m3	PYs	
Direct Employment:							
Harvesting & Silviculture	0.12	20	0.40	65	0.40	65	\$3.10
Processing	0.00	0	0.06	10	0.26	42	\$2.77
Total Direct	0.12	20	0.46	75	0.66	108	\$5.87
Indirect and Induced:							
Nass LRMP Area		3		3		3	
B.C. Other				11		110	
Total Indirect & Induced		3		13		113	\$3.08
Total		23		89		221	\$8.95
Employment Impact Ratios (Indirect & Induced, No Migration)							
Logging		1.15		1.180		2.030	
Wood Products				1.290		1.930	
Pulp and Paper				1.600		2.158	
Estimated Annual Before Tax Income (\$2006 million)		\$0.63		\$4.03		\$8.95	

Notes:

1. Employment Impact Ratios are the number of direct, indirect and induced jobs per direct job, and they assume no migration.
2. Employment ratios for the Primary Impact Area are for the Kalum South TSA, an area that includes Terrace, Kitimat and the surrounding area.
3. The employment multipliers for all of BC take into account the fact that the BC forest industry is integrated so that the jobs in the logging sector are not double-counted.
4. The employment multipliers for logging consider towing and barging to be indirect jobs, and as a result, the multipliers are applied to harvesting and silviculture less barging and towing.
5. Before Tax Income levels are 2001 data for the Kalum FD from the Canada Census, inflated to 2006 dollars using the Consumer Price Index. These income levels are \$47,400 per PY for logging, \$56,000 per PY for wood processing and \$68,000 per PY for pulp and paper.
6. More detail on forest industry coefficients in terms of PYs per 000 m3 are presented in the two following tables.
7. May not add exactly due to rounding of the employment coefficients. Employment coefficients for induced employment are calculated based on jobs and the total harvest processed in BC.

Source:

- BC Multipliers: Horne, Dr. Garry, 2005, *BC Provincial Economic Multipliers and How to Use Them*, 44 pages.
- Nass TSA Multipliers: Horne, Dr. Garry, BC Stats, 2001 Economic Dependency Tables for MSRMLRMP Areas, 2004, 19 pages.
- Other Data: prepared by Pierce Lefebvre Consulting based on various sources of data.

Table 30 Estimated Direct and Indirect Employment Impacts from Nass South SRMP

Measured Impacts - Nass TSA (2008)	Annual Harvest Levels 3 Year Average for Nass TSA		Nass South SRMP Impact of Reduction in Timber Supply		
			Current Economic Conditions/ Short Term	Medium Term Potential (Harvest Full AAC - Decade 1)	Long Term Potential (Harvest Full AAC - Decade 7)
Nass TSA AAC Excluding Upper Nass:					
Base Case (m3)			Harvest 24% of AAC	665,000	407,000
With Nass South SRMP (m3)			Harvest 24% of AAC	570,343	357,750
Timber Volume	164,114	m3	-23,360	m3	-94,657
Percentage Change in Timber Supply			-14.23% reduction	-14.23%	-12.10%
Employment - Nass South SRMP Area	PYs per 000 m3	Total PYs		Person Years	Person Years
Direct	0.12	20	-3 PYs	-11	-6
Indirect & Induced	0.02	3	0 PYs	-2	-1
Total		23	-3 PYs	-13	-7
Employment - Primary Impact Area (Includes Nass South SRMP Area):					
Direct	0.46	75	-11 PYs	-44	-23
Indirect & Induced	0.08	13	-2 PYs	-8	-4
Total		89	-13 PYs	-51	-27
Total BC Employment (Includes Primary Impact and Other Areas)					
Direct	0.66	108	-15 PYs	-62	-32
Indirect & Induced	0.69	113	-16 PYs	-65	-34
Total		221	-31 PYs	-127	-66
Stumpage Net of BCTS Costs	\$2.00	per m3	-\$46,720	Annual	-\$189,314
Net Economic Value (Incl. Stumpage & Labour Rents)	\$3.79	per m3	-\$88,531	Annual	-\$358,732

The following tables show timber harvest and stumpage revenues based on reported volumes by scale data from the Ministry of Forests and Range (MOFR) Harvest Billing System. (Provided by BC MSRM, May 27th, 2005). Slightly different revenues and stumpage revenues can be obtained from the MOFR Revenue Branch where harvest volumes are tabulated by invoice date, but the trends are the same.

Table 31 Timber Harvest for BC Northwest, 1994 – 2006

BC Northwest Timber Harvest Scaled Volume (m3)		Nass TSA		Other Kalum Forest District				Kalum Forest District Total	Cassiar, Kispiox and Cranberry TSAs	North Coast Forest District	Northwest Grand Total
Year	Data	Proportion of Region Harvest	Total Nass TSA Harvest	Kalum TSA	TFL 1	TFL 41	Other Kalum FD				
1994	Scaled Volume (m3)	27%	1,412,945	329,949	889,966	518,074	25,878	3,176,812	1,380,956	768,181	5,325,949
1995	Scaled Volume (m3)	28%	1,307,180	463,761	736,946	526,058	2	3,033,946	1,205,370	493,631	4,732,948
1996	Scaled Volume (m3)	17%	616,139	521,718	522,486	362,802	36,889	2,060,033	1,105,852	506,482	3,672,367
1997	Scaled Volume (m3)	16%	467,185	307,293	488,971	283,037	2,233	1,548,719	908,014	545,662	3,002,396
1998	Scaled Volume (m3)	19%	533,343	238,848	509,679	291,385	1,886	1,575,140	893,329	382,767	2,851,235
1999	Scaled Volume (m3)	19%	712,343	376,332	702,869	351,040	1,991	2,144,575	1,081,192	429,361	3,655,128
2000	Scaled Volume (m3)	17%	603,713	423,971	648,596	347,700	98,948	2,122,927	996,898	449,639	3,569,464
2001	Scaled Volume (m3)	14%	322,156	338,822	327,099	241,194	70,864	1,300,135	426,262	509,968	2,236,365
2002	Scaled Volume (m3)	14%	261,485	188,708	138,490	331,277	63,882	983,842	316,870	553,755	1,854,467
2003	Scaled Volume (m3)	14%	181,533	179,299	59,461	172,455	53,893	646,640	351,901	281,375	1,279,915
2004	Scaled Volume (m3)	12%	221,393	105,963	46,480	330,650	49,110	753,596	386,895	720,040	1,860,530
2005	Scaled Volume (m3)	11%	105,984	161,213	64,372	128,374	94	460,037	282,959	261,696	1,004,692
2006*	Scaled Volume (m3)	13%	164,114	164,243	255,851	209,607	42	793,857	300,642	174,737	1,269,237
3 Yr Average	Scaled Volume (m3)	12%	163,830	143,806	122,234	222,877	16,415	669,163	323,499	385,491	1,378,153
5 Yr Average	Scaled Volume (m3)	13%	186,902	159,885	112,931	234,472	33,404	727,594	327,853	398,321	1,453,768
10 Yr Average	Scaled Volume (m3)	16%	357,325	248,469	324,187	268,672	34,294	1,232,947	594,496	430,900	2,258,343

BC Northwest Region Timber Harvest Scaled Values Per M3 1994 - 2006		Nass TSA	Other Kalum Forest District				Kalum Forest District Total	Cassiar, Kispiox and Cranberry TSAs	North Coast Forest District	Northwest Grand Total
Year	Data		Kalum TSA	TFL 1	TFL 41	Other Kalum FD				
1994	Scaled Value (\$2006)	\$9.89	\$11.08	\$9.04	\$11.92	\$22.43	\$10.21	\$15.32	\$28.57	\$14.18
1995	Scaled Value (\$2006)	\$11.42	\$11.05	\$8.78	\$9.50	\$0.88	\$10.39	\$16.58	\$38.56	\$14.90
1996	Scaled Value (\$2006)	\$6.82	\$18.44	\$12.67	\$13.52	\$2.89	\$12.36	\$14.18	\$26.73	\$14.89
1997	Scaled Value (\$2006)	\$10.33	\$8.34	\$6.76	\$2.30	\$29.11	\$7.37	\$16.94	\$6.72	\$10.15
1998	Scaled Value (\$2006)	\$5.69	\$2.54	\$2.23	\$0.66	\$0.30	\$3.16	\$10.25	\$6.95	\$5.89
1999	Scaled Value (\$2006)	\$6.08	\$3.89	\$1.10	\$0.90	\$0.30	\$3.21	\$8.63	\$5.58	\$5.09
2000	Scaled Value (\$2006)	\$4.91	\$4.06	\$0.81	\$1.45	\$0.30	\$2.71	\$5.24	\$14.27	\$4.87
2001	Scaled Value (\$2006)	\$9.63	\$4.76	\$0.78	\$4.69	\$0.33	\$4.71	\$4.78	\$3.94	\$4.55
2002	Scaled Value (\$2006)	\$16.09	\$5.79	\$0.29	\$1.36	\$0.28	\$5.90	\$3.89	\$8.07	\$6.21
2003	Scaled Value (\$2006)	\$9.23	\$5.76	\$0.27	\$0.27	\$8.91	\$5.03	\$5.20	\$1.79	\$4.36
2004	Scaled Value (\$2006)	\$9.05	\$6.32	\$7.69	\$0.51	\$3.22	\$4.46	\$12.71	\$4.44	\$6.17
2005	Scaled Value (\$2006)	\$6.27	\$6.43	\$9.30	\$6.11	\$0.26	\$6.70	\$9.99	\$11.67	\$8.93
2006	Scaled Value (\$2006)	\$5.77	\$1.16	\$2.24	\$2.44	\$0.25	\$2.80	\$9.87	\$3.61	\$4.59
3 Year Average	Scaled Value (\$2006)	\$7.35	\$4.40	\$4.17	\$2.19	\$3.21	\$4.32	\$11.04	\$5.95	\$6.35
5 Year Average	Scaled Value (\$2006)	\$10.16	\$5.03	\$2.81	\$1.67	\$3.93	\$4.87	\$8.40	\$5.95	\$5.96
10 Year Average	Scaled Value (\$2006)	\$7.77	\$4.83	\$2.34	\$1.77	\$2.26	\$4.29	\$9.24	\$6.73	\$6.06

• Data for 2006 are based on Billing Date whereas previous years are based on Scaled Date; data include coniferous harvest from Crown lands, all grades, and all products.
Source: BC Ministry of Forests and Range Harvest Billing System, Harvest Reports by Date of Invoice; as provided by Glenn Farenholtz, BC MAL on April 30th, 2007.

APPENDIX 2 MINING

This Appendix provides additional detail on the current and proposed mining developments near the Nass South SRMP area, as well as detail on major producing mines in the region, and exploration expenditures in the Nass South SRMP. This Appendix also provides 2002 benchmark data for one large BC metal mine, and aggregated 2001 data from BC MEMPR on three large metal mines operating in BC.

Table 32 Selected Current and Proposed Mining Developments in BC Northwest Region

Mining Developments in BC Northwest Region	Operating Metal Mines		Proposed Developments - Metal Mining			Aggregate Mines	
			Environmental Assessment (EA) Process Completed	EA Process Started	Under Development	EA Process Started	
	Eskay Creek	Huckleberry Mine	Red Chris	Galore Creek	Mt. Klappan	Swamp Point	Bear River
Location	Eskay Creek, 80 km by air north of Stewart	86 km southwest of Houston - in Morice LRMP Area	20 km south of Iskut, or about 240 km north of Meziadin Junction by road	65 km south of Telegraph Creek; approx. 150 km northwest of Stewart by air, and 500 km by road	approximately 425 km northeast of Stewart	50 km south of Stewart	Stewart
Production Years:							
Start Up Date	1995	1997	2010 (Note 1)	2010	Likely 2011 or later (Note 2)	2007 (limited shipments)	2009
Closure Date	2008 (Note 3)	2010 (Note 4)	2035 (25 years)	2030 (20 years)	2030 (20 years)	2025 (minimum of 18 years)	2034 (minimum of 25 years)
Type of Mine	Underground gold and silver mine	Open Pit Copper & Molybdenum Mine	open pit copper-gold property	open pit copper-gold-silver property	anthracite coal deposits	aggregate quarry	aggregate quarry
Employment:							
Mining Jobs	278	214	256	486	247	20 to 50	approx. 40
Contractor Jobs	<u>90</u>	<u>69</u>	<u>132</u>	<u>220</u>	<u>81</u>		
Total	368	283	388	706	328		
PYs of Construction			approx. 500 PYs	approx. 1,000 PYs	N/A	N/A	approx. 100 PYs
Estimated Number of Employees in Nass South SRMP Area	38	2	N/A	approx. 60 during const.& 100 PYs during operations (Note 5)	N/A	Unknown, but mainly from Stewart (e.g. 10+) and Prince Rupert	approx. 40

Notes:

1. Since construction has yet to start on the Red Chris mine (as of May 2007), the earliest it could open is in 2010 assuming a 2.5 year construction period.
2. With respect to Mount Klappan, given that only the Project Description has been filed with the Environmental Assessment Office (EAO) and not the Project Application, and that the EAO process typically requires approximately 2 years, construction is unlikely to start before 2009.
3. Eskay Creek is projected to continue operations until early 2008; but already, the 2006 production of 2.8 MT of gold, is much lower than the 2002 peak of 11.2 MT of gold, a result of mining lower-grade ore.
4. The Huckleberry Mine has applied to mine an extension of the main ore zone that would extend the mine life to 2010.
5. Galore Creek estimates are based on the project proposal. During construction, Stewart residents may hold 30 direct jobs and 30 indirect jobs for 2 years; during operations, Stewart resident may include 30 Galore Creek mining employees, 50 drivers, 12 maintenance and repair personnel relating to trucks and vehicles, and 6-7 additional employees at the port

operations. Source: Calibre Strategic Services et al., Galore Creek Project Socio-Economic Impact Assessment, page 12-55. (Data assume that Galore Creek proceeds without the Red Chris Mine).

6. The next two closest mines in operation include: Table Mountain, a gold mine that opened in 2006 and is located north of Dease Lake, and the Kemess open-pit gold mine in the Northern Interior region of BC.

Source:

Prepared by Pierce Lefebvre Consulting based on various sources. Major sources of information include: BC MEMPR, *BC Mining and Mineral Exploration Overview 2006*.

Table 33 Major and Recent Past Producers in and Near Nass South SRMP Area

Major and Recent Past Producers in and Near Nass South SRMP Area	Location	Production Years	Type of Deposit	Employment	Current Activity
Granduc Mine (Newmont Mining Corporation until acquired by Esso Minerals Canada in 1979)	approx. 40 km northwest of Stewart, in Nass South SRMP area	1971 to 1978 and 1981 to 1984	Copper-silver deposit (underground mine)	750 people with many residing in Stewart	Currently owned by Bell Resources Corporation - has exploration program on site
Scottie Gold Mines (closed in 1984 due to the high maintenance cost associated with the access road when Granduc closed)	Near Summit Lake, approx. 40 km northwest of Stewart, in Nass South SRMP area	1981 to 1984	Gold & silver deposit (underground mine)	N/A	Currently owned by Tenajon Resources Corporation, MEM reports 2005 exploration
Silbak Premier Mines (Westmin Resources between 1989 and 1996))	approx. 20 km north of Stewart	1918 to 1963 (underground) and 1989 to 1996 (open-pit)	Gold & silver deposit	N/A	

Note: Other smaller past producers include underground mines such as Indian Mines (in operation between 1923 and 1925, and in the 1950s) and the Big Missouri group of claims (some production between 1938 and 1942).

Source: Prepared by Pierce Lefebvre Consulting based on various sources of data including: BC MEMPR; PriceWaterhouseCoopers, *The Mining Industry in British Columbia - 2001*, page 19; 2004 Stewartbc.com; and Bell Resources Corporation, <http://www.bellresources.com/Granduc> project; accessed June 5th, 2007.

Table 34 Mineral Exploration Expenditures in the Nass South SRMP Area, 1980 – 2005

Year	BC ARIS Expenditures		Nass South SRMP		Nass % of BC
	\$ Current	\$2006	\$ Current	\$2006	
1980	\$33.2	\$82.4	\$0.09	\$0.22	0.26%
1981	\$45.8	\$101.0	\$0.43	\$0.95	0.94%
1982	\$21.7	\$43.3	\$0.21	\$0.42	0.97%
1983	\$29.6	\$55.6	\$0.13	\$0.24	0.43%
1984	\$28.2	\$50.8	\$0.08	\$0.15	0.29%
1985	\$28.5	\$49.3	\$0.35	\$0.60	1.22%
1986	\$64.6	\$107.5	\$0.24	\$0.40	0.38%
1987	\$79.4	\$126.6	\$0.82	\$1.31	1.04%
1988	\$75.8	\$116.1	\$0.56	\$0.86	0.74%
1989	\$61.2	\$89.3	\$1.33	\$1.94	2.17%
1990	\$63.8	\$88.8	\$1.53	\$2.13	2.40%
1991	\$56.1	\$74.0	\$1.46	\$1.93	2.61%
1992	\$27.1	\$35.2	\$0.37	\$0.48	1.36%
1993	\$16.8	\$21.5	\$0.53	\$0.68	3.17%
1994	\$34.9	\$44.5	\$1.06	\$1.35	3.04%
1995	\$31.4	\$39.2	\$0.47	\$0.58	1.48%
1996	\$46.7	\$57.2	\$0.51	\$0.63	1.10%
1997	\$51.7	\$62.4	\$0.92	\$1.11	1.78%
1998	\$22.5	\$26.9	\$0.03	\$0.04	0.13%
1999	\$12.1	\$14.3	\$0.00	\$0.01	0.04%
2000	\$13.6	\$15.6	\$0.24	\$0.28	1.78%
2001	\$15.9	\$17.7	\$0.01	\$0.01	0.06%
2002	\$19.1	\$20.8	\$0.17	\$0.19	0.90%
2003	\$26.0	\$27.6	\$0.70	\$0.74	2.68%
2004	\$65.0	\$67.8	\$1.96	\$2.04	3.01%
2005	\$110.0	\$112.2	\$1.08	\$1.10	0.98%
Totals	\$1,080.8	\$1,547.6	\$15.3	\$20.4	1.32%
Annual Avg. 1980 - 2005	\$41.6	\$59.5	\$0.6	\$0.8	1.32%
5 Year Averages					
1980 -1985 (6 year)	\$31.2	\$63.7	\$0.2	\$0.4	0.67%
1986 - 1990	\$69.0	\$105.7	\$0.9	\$1.3	1.26%
1991 - 1995	\$33.3	\$42.9	\$0.8	\$1.0	2.34%
1996 - 2000	\$29.3	\$35.3	\$0.3	\$0.4	1.17%
2001 - 2005	\$47.2	\$49.2	\$0.8	\$0.8	1.66%

Notes:

1. Exploration expenditures in current dollars were converted to 2006\$ using the annual average Consumer Price Index (CPI) as reported in Statistics Canada, CANSIM, table (for fee) 326-0002 and Catalogue nos. 62-001-XPB and 62-010-XIB; Statistics Canada obtains annual average indexes by averaging the indexes for the 12 months of the calendar year.
2. BC ARIS expenditures for 2003, 2004 and 2005 are estimated at 50% of the BC MEMPR estimates of total mineral exploration expenditures for 2003 of \$52 million, for 2004 of \$130 million and for 2005, of \$220 million. ARIS reported expenditures have represented about half of total estimated mineral exploration expenditures in BC in recent years.

Source: BC Ministry of Energy and Mines. *Assessment Report Indexing System (ARIS)*.

<http://www.em.gov.bc.ca/mining/GeolSurv/Aris/default.htm>

Table 35 Key Mining Indicators for Nass South SRMP Area Relative to BC

Key Mining Indicators for Nass South SRMP Area Relative to BC	Nass SRMP Area	Nass SRMP Area as a % of B.C.	B.C.
	GIS Data - 2007		BC 2001 Minfile
Total Area (ha)	662,510	0.7%	94,726,166
Mineral Tenures (ha)	323,471	10.7%	3,012,263
Coal Tenures (ha)	0	0.0%	177,808
Placer Tenures (ha)	0	0.0%	150,916
Metallic Mineral Occurrences	GIS Data - 2007		BC 2004 (Minfile)
Producers	0	0.0%	12
Developed Prospects	12	2.9%	412
Past Producing Mines	41	2.6%	1577
Prospects	58	3.7%	1570
Showings	210	3.3%	6437
Total	321	3.2%	10,008
Metallic Mineral Potential (ha)	GIS Data - 2007		BC (2005)
High	311,930	1.5%	20,734,474
Moderate to High		0.0%	15,957,447
Moderate	307,410	1.5%	20,015,029
Moderate to Low		0.0%	21,422,257
Low	42,630	0.3%	16,026,891
Total	661,970		94,156,098
Industrial Mineral Potential (ha)			BC (2005)
High/Moderate to High	210	0.0%	20,923,297
Moderate	135,110	0.4%	30,302,954
Low/ Moderate to Low	526,640	1.2%	43,504,955
Total	661,960		94,731,206
Exploration Expenditures (2002\$)	Millions		Millions
ARIS - Annual Average 1980-2005	\$0.8	1.3%	\$60
ARIS 2005 Exploration Expenditures	\$0.2	0.9%	\$21
Reported ARIS Expenditures as % of Total for BC	Approx. 50% in recent years		

Source:

Nass South SRMP data: ILMB (BC MAL) GIS data provided June 2007; see Appendix 6.

BC data:

1. Area, Mineral tenures: 2001 Minfile data, as reported in: Pierce Lefebvre Consulting et al., *Socio-Economic Impact Assessment of the Provincial Government's Strategic Land Use Plans on Key Sectors in B.C.*, 2001, Appendix 4.
2. Metallic Occurrences: 2004 Minfile data, as obtained from MEMPR website.
3. Metallic Mineral Potential: 2005 Minfile data, as obtained from Dorthe Jakobsen, BC MEMPR, e-mail November 9, 2005.

APPENDIX 3 PINE MUSHROOM HARVESTING

Table 36 Pine Mushroom Harvest in Northwest BC, Various Estimates of Size

Pine Mushroom Harvesting in BC Northwest	Year	Total Volume	Total Value	Jobs	Additional Comments	Source
Terrace - Nass Valley Area	1993	110,000 kg	Harvest revenues of \$3.4 million to harvesters (excluding shipping and processing), or \$30.91 per kg		Summary of 1993 pine mushroom harvest information by location, money paid to harvesters and weight of mushroom harvested	MOFR, see Note 1
Nass Valley Study Area	1994	150,000 kg	Harvest revenues of \$3.755 million (\$25.03 per kg) , excluding shipping and processing in BC of \$2.3 million (in a good mushroom year, not average)	28,800 person days, or 160 PYs at 180 days per PY	Estimated that 54% were Nass Valley residents, 17% resided in Terrace/Kitimat, 24% were from elsewhere in BC, 3% were from elsewhere in Canada, and 1% were foreign residents. Pickers earned an estimated \$4,500 per season (\$5,755 in 2007\$), or \$130 per day for 35 days. Based on average earnings for each picker, some 850 pickers were involved.	Industry survey of buyers and harvesters in the Nass Valley area; conducted by Meyer Resources, see Note 2
BC Northwest Harvest	1998	150,000 kg to 250,000 kg per year			60% of BC pine mushroom harvest originates from northwest region of BC, and BC production is 250,000 to 400,000 kg per year	Estimates provided in 1998 study of pine mushrooms in the Skeena-Bulkley region, see Note 3
Nass Valley	1998		Three million dollar industry	120 PYs	Defines Nass Valley as including the Cranberry TSA	BC MOFR, Cranberry TSA, see Note 4
Gitanyow Territories	2000			approx. 305 pickers for 457 hours on specific site	Estimated 1.42 kg of pine mushroom per hectare of intense activity, and 0.39 kg per ha of pine mushroom habitat over a 4 week period	Bravi, R. et al, prepared for Gitanyow Hereditary Chiefs, see Note 5
Nisga'a Lands	2005	Average of 22,000 kg per year (2000 to 2005)	Average of \$0.67 million per year, or \$35 per kg (2007\$)	N/A but 415 permits were issued in 2003	Volume harvested ranges between high of 45,360 kg in 2003 and 8,210 kg in 2005.	Nisga'a Lisims Government, see Note 6

Source:

1. BC MOFR, *Botanical Forest Products An Overview - Chapter 1, Wild Edible Mushrooms, Profile of Industry in BC*, April 1995, www.for.gov.bc.ca/hfp/publications/00002/chpat1.htm; see more detail on following table.
2. Meyer Resources, *A Preliminary Analysis of the Economic Importance of the 1994 Pine Mushroom Industry of the Nass Valley Area, BC*; as reported in: Garniet et al., page 14.
3. Wills et al. 1998, as reported in: Garniet, Sharmin, Holly Ridenour and Fred Philpot, *An Overview of Pine Mushrooms in the Skeena-Bulkley Region*, The Northwest Institute for Bioregional Research, April 1998, 18 pages + appendices.
4. BC MOFR, Cranberry TSA, page 4
5. Bravi, Rebecca S., and Allen Gottesfeld, *Fall 2000 Pine Mushroom Harvest Productivity and Inventory Study, Gitanyow Traditional Territories*, prepared for Gitanyow Hereditary Chiefs, 22 pages.
6. Nisga'a Lisims Government, Nisga'a Final Agreement 2004-2005 Annual Report, page 20.

Table 37 Pine Mushroom Harvest by BC Region, 1993

1993 Pine Mushroom Harvest for BC				
Location	\$ to Harvesters	Weight Harvested (Kg)	% of Total BC	\$ per Kg (1993)
Anahim Lake	\$29,000	900	0.7%	\$32
Boston Bar	\$7,000	230	0.2%	\$30
Kootenays - Arrow Lake	\$200,000	6,400	5.1%	\$31
Powell River	\$7,000	230	0.2%	\$30
Terrace - Nass Valley	\$3,400,000	110,000	87.8%	\$31
Valemont	\$7,000	230	0.2%	\$30
Vancouver Island	\$230,000	7,300	5.8%	\$32
Total	\$3,880,000	125,290	100.0%	\$31

Source: BC MOFR, *Botanical Forest Products - An Overview - Chapter 1, Wild Edible Mushrooms, Profile of Industry in BC*, April 1995, www.for.gov.bc.ca/hfp/publications/00002/chpat1.htm.

Table 38 Estimated Net Economic Value from Pine Mushroom Harvest

Estimated Net Economic Value from Mushroom Harvest in Nass South SRMP Area	Average Per Year
Labour Rent (5% of Payments to Harvesters)	\$65,329
Industry Rent (5% of Total Revenues)	\$91,460
Public Sector Rent	\$0
Total	\$156,789
Assumptions:	
Volume (Kg) - in a relatively good year, 40,000 kg may be harvested from the Nass South SRMP area; was likely much lower in 2004/2005 due to low prices	40,000
Selling Price per Kg (Average 2000-2005 Price Reported for Nisga'a harvest - \$2007)	\$32.66
Payment to Harvesters	\$1,306,574
Industry Revenues (add 40% for shipping and processing)	\$1,829,203
Industry Rent as a % of Revenues	5%
Labour Rent as a % of Wages and Salaries	5%

Notes:

- The assumptions are rough estimates and are presented to provide an order of magnitude of what the economic rents might be. The number of significant digits gives a sense of precision that does not exist but is retained to facilitate understanding of the methodology.
- Section 1.1 in this report (Project Methodology) defines economic rent and explains the net economic value assumptions.
- Payments to harvesters of \$1.3 million would imply that approximately 500 pickers would each earn \$2,600 for the season. The average earning per picker compares to a 1994 estimate by Meyer Resources that found that pickers each earned an average of \$5,755 per season (\$2007), but this occurred during a period of much higher mushroom prices. Each year, some 250 people are known to reside at Cranberry Junction (The Zoo) mainly to harvest pine mushroom in the area, although many would work outside the Nass South SRMP.

Source: Prepared by Pierce Lefebvre Consulting.

APPENDIX 4 TOURISM AND RECREATION

This Appendix provides additional data on the socio-economic impacts associated with tourism and recreation. Various tables are provided including:

- Table 39: Traffic Counts – Highway 37, Highway 37A and Highway 16
- Table 40: Stewart-Hyder Visitor Registration
- Tables 41 through 46: Hunting Effort in Nass South SRMP area and related impacts
- Table 47: Expenditures and Net Economic Value per Recreation Day

Table 39 Daily Traffic Volumes on Highway 37 & 37A In/Near Nass South SRMP Area

Daily traffic Volumes on Highways 37 & 37A - in and Near Nass South SRMP								
Short Term Counts in Nass South SRMP Area	Daily Volumes Both Directions - Short Term Counts							Average
	day 1	2	3	4	5	6	7	
Route 37A at Avalanche Gate in Stewart								
March (3 Day Count)	108	129	140					126
August (6 Day Counts)	650	702	605	609	581	531		613
Route 37 - 1 km North of Route 37A at Meziadin Junction								
March (3 Day Count)	112	120	148					127
August (6 Day Counts)	427	452	467	519	379	390		439
Permanent Count P-47-9NS - Route 37 Just North of Route 16 (Kitwanga), South of Kitwancool and Nass South SRMP Area								
Monthly Average Daily Volume by Day of Week							Average Annual	
Sunday	Monday	Tuesday	Wed.	Thursday	Friday	Saturday		
2004 Annual Average Daily Total	669	819	819	864	873	949	716	816
Year 2005:								
March 2005	560	722	731	767	803	781	603	709
August 2005	1,001	1,145	1,142	1,211	1,203	1,372	1,044	1,160
2005 Annual Average Daily Total	669	819	819	864	873	949	716	816
Year 2006:								
March 2006	495	696	647	714	697	785	526	651
August 2006	964	1,243	1,203	1,274	1,285	1,470	1,164	1,229
2006 Annual Average Daily Total	631	783	791	859	851	946	701	795
Permanent Count P-47-1EW-N, P-47-1EW - Route 16 Just East of Route 37 (Kitwanga)								
Monthly Average Daily Volume by Day of Week							Average Annual	
Sunday	Monday	Tuesday	Wed.	Thursday	Friday	Saturday		
2004 Annual Average Daily Total	1284	1396	1367	1394	1476	1595	1248	1394
Year 2005:								
March 2005	1,263	1,083	1,121	1,252	1,302	992	1,013	1,147
August 2005	1,887	1,763	1,789	1,913	2,100	1,738	1,728	1,845
2005 Annual Average Daily Total	1,135	1,275	1,234	1,273	1,367	1,482	1,155	1,275
Year 2006:								
March 2006	962	1,049	958	1,039	1,124	1,193	904	1,033
August 2006	1,686	1,914	1,778	1,791	1,940	2,146	1,741	1,856
2006 Annual Average Daily Total	1,102	1,253	1,215	1,282	1,348	1,480	1,138	1,260

Notes:

1. Traffic volumes for the Permanent Count are available for all 12 months. The highest traffic volumes are in August and the lowest in January. The table shows March and August data so that the information can be compared with the traffic volumes available for the Short Term Counts in the Nass South SRMP area.
2. All traffic counts are for both directions; data on each direction are available and show that each direction is about half of the total.

Source: From BC Ministry of Transportation website, accessed June 14, 2007; as follows:

- For Stewart 47-031EW: *Daily Volumes from 03/12/2005 through 03/16/2005 and from 08/01/2005 through 08/08/2005*
- For Traffic Count 47-016NS: *Daily Volumes from 03/12/2005 through 03/15/2005 and from 08/01/2005 through 08/08/2005.*
- For Kitwanga - P-47-9NS and P-47-1EW-N: *Annual Day of Week Summary for 2005 and 2006.*

Table 40 Stewart-Hyder Information Centre - Visitor Registrations

Stewart-Hyder Information Centre, Visitor Registrations	1998	1999	2000	2001	2002	2003	2004	2005	2006
May 15-31	156	81	483		258	368	219	426	227
June 1-30	3,177	1,674	1,797	1,625	1,861	1,598	1,349	1,379	921
July 1 - 31	4,220	5,120	4,156	4,283	3,957	3,731	3,921	3,554	2,359
August 1 - 31	4,283	4,412	3,238	4,102	4,294	3,828	3,814	3,580	3,002
September 1 -15	1,495	1,029	1,081	1,094	1,256	862	1,242	1,146	1,093
Total	13,331	12,316	10,755	11,104	11,626	10,387	10,545	10,085	7,602
Year to Year % Change		-8%	-13%	3%	5%	-11%	2%	-4%	-25%

Note: Excludes winter traffic.

Source: Gwen McKay, Manager, Stewart and Hyder International Chamber of Commerce, Personal Communication, July 4th, 2007.

Table 41 Hunting Effort and Harvest in the Nass South SRMP Area

Annual Averages - 1990 to 2005		Total All Species - All 4 Wildlife Management Units Overlapping Nass South SRMP			Total All Species - Estimate for Nass South SRMP		
		Animals Killed	Number of Hunter Hunters	Days	Animals Killed	Number of Hunter Hunters	Days
MU 6-14	R	36	152	593	2	8	30
	N	8	8	58	0	0	3
	Total	44	160	651	2	8	33
MU 6-16	R	49	157	878	39	125	702
	N	3	4	35	2	3	28
	Total	52	161	913	42	129	730
MU 6-17	R	19	73	385	1	4	19
	N	5	10	60	0	0	3
	Total	24	83	445	1	4	22
MU 6-30	R	68	304	1,904	3	15	95
	N	11	14	94	1	1	5
	Total	79	318	1,998	4	16	100
Total	R	173	685	3,760	46	152	846
	N	27	37	247	3	5	38
	Total	199	722	4,007	49	157	885

Notes:

R: BC Residents (excluding First Nations)

N: Non-Residents (guided hunting).

- Includes the following species: black bear, grizzly bear, moose, goat, wolf, mule deer and white-tailed deer; detailed data by species is included in Appendix 4.
- Data for the Nass South SRMP are estimated by assuming that 80% of MU 6-16, and 5% of MUs 6-14, 6-17, and 6-30 are in the Nass South SRMP area.

Source: MOE, Summary Statistics Data Base; Appendix 4 provides more detail.

Table 42 Hunting Effort in Nass South SRMP

	Annual Average 1990- 2005 - Estimate for Nass South SRMP Area			B.C. 2002/ 2003 Hunting Season			Nass South SRMP as a % of BC		
	Resident	Non- Res.	Total	Resident	Non- Res.	Total	Resident	Non- Res.	Total
Black Bear									
Kills	12	2	14	2,650	1,241	3,891	0.5%	0.1%	0.4%
Hunters	21	2	23	7,792	2,199	9,991	0.3%	0.1%	0.2%
Hunter Days	103	13	115	63,449	13,802	77,251	0.2%	0.1%	0.1%
Grizzly Bear									
Kills	2	1	3	133	83	216	1.6%	0.7%	1.3%
Hunters	8	1	9	584	243	827	1.4%	0.3%	1.1%
Hunter Days	55	6	60	5,062	1,802	6,864	1.1%	0.3%	0.9%
Moose									
Kills	25	0	26	9,446	1,357	10,803	0.3%	0.0%	0.2%
Hunters	94	1	94	29,597	2,226	31,823	0.3%	0.0%	0.3%
Hunter Days	533	6	539	244,456	12,519	256,975	0.2%	0.1%	0.2%
Goat									
Kills	3	1	4	255	330	585	1.2%	0.3%	0.7%
Hunters	8	1	9	1,213	584	1,797	0.7%	0.2%	0.5%
Hunter Days	32	6	38	5,566	3,159	8,725	0.6%	0.2%	0.4%
Wolf									
Kills	1	0	1	511	65	576	0.3%	0.1%	0.2%
Hunters	9	1	10	2,517	1,517	4,034	0.3%	0.1%	0.2%
Hunter Days	52	8	60	27,895	11,483	39,378	0.2%	0.1%	0.2%
Mule Deer									
Kills	1	0	1	16,654	170	16,824	0.0%	0.0%	0.0%
Hunters	6	0	6	45,473	952	46,425	0.0%	0.0%	0.0%
Hunter Days	34	0	34	378,485	6,152	384,637	0.0%	0.0%	0.0%
White Tailed Deer									
Kills	1	0	1	6,569	38	6,607	0.0%	0.0%	0.0%
Hunters	6	0	6	20,857	289	21,146	0.0%	0.0%	0.0%
Hunter Days	38	0	38	183,022	2,024	185,046	0.0%	0.0%	0.0%

Notes:

- As is the case for all of BC, the Nass South SRMP data on resident hunting exclude the hunting effort by First Nations people as they are not required to report the hunting effort to the province.
- Data for the Nass South SRMP area are estimated based on the hunting effort and harvest from the four management units that overlap the Nass South SRMP area, namely 6-14, 6-16, 6-17 and 6-30, and pro-rating effort and harvest assuming that 80% of MU6-16, and 5% of MU6-14, 6-17, and 6-30 are in the Nass South SRMP area.

Source:

Nass South SRMP: Source: MOE, Fish and Wildlife Branch, *Summary Statistics Data Base, Hunter Harvest and Effort*.

BC Data: MOE, Fish and Wildlife Branch, *Big Game Hunting Statistics for the 2002/03 Season*.

**Table 43 Hunting Effort in MUs Overlapping Nass South SRMP for Selected Species
Annual Averages 1990- 2005**

Estimated Hunting Effort in Nass South SRMP Area		White Tail Deer			Mule Deer			Black Bear			Grizzly Bear		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 6-14	R	0.2	1.2	4.1	0.4	2.4	9.0	0.3	0.7	3.7	0.1	0.3	1.9
	N	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	1.9	0.0	0.0	0.1
	Total	0.2	1.2	4.1	0.4	2.4	9.0	0.7	1.0	5.6	0.1	0.3	1.9
MU 6-16	R	0.0	0.0	0.0	0.3	1.5	10.2	11.0	18.4	90.3	1.8	7.0	47.0
	N	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.0	7.7	0.5	0.5	4.4
	Total	0.0	0.0	0.0	0.3	1.5	10.2	11.9	19.4	98.0	2.3	7.5	51.4
MU 6-17	R	0.0	0.0	0.0	0.0	0.1	0.5	0.1	0.5	2.6	0.1	0.4	3.0
	N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.7	0.0	0.1	0.5
	Total	0.0	0.0	0.0	0.0	0.1	0.5	0.2	0.6	3.3	0.2	0.5	3.5
MU 6-30	R	0.6	4.7	33.7	0.3	2.4	14.6	0.5	1.3	6.0	0.1	0.4	2.7
	N	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	2.4	0.0	0.1	0.5
	Total	0.6	4.7	33.7	0.3	2.4	14.6	1.0	1.6	8.3	0.2	0.5	3.2
Total	R	0.7	5.8	37.8	1.0	6.4	34.3	12.0	20.9	102.6	2.1	8.1	54.5
	N	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.7	12.6	0.6	0.7	5.5
	Total	0.7	5.8	37.8	1.0	6.4	34.3	13.7	22.6	115.2	2.7	8.8	60.0

Estimated Hunting Effort in Nass South SRMP Area		Goat			Moose			Wolf			Total All Species		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 6-14	R	0.2	0.6	2.0	0.4	1.7	6.8	0.3	0.8	2.3	1.8	7.6	29.7
	N	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0.1	0.6	0.4	0.4	2.9
	Total	0.2	0.6	2.3	0.4	1.7	6.8	0.3	0.8	2.8	2.2	8.0	32.5
MU 6-16	R	2.7	7.3	29.0	22.8	83.8	479.2	0.8	7.4	46.6	39.4	125.4	702.3
	N	0.8	0.7	4.7	0.1	0.6	5.3	0.0	0.7	5.9	2.3	3.4	27.9
	Total	3.5	8.0	33.7	22.9	84.4	484.5	0.8	8.1	52.5	41.7	128.8	730.2
MU 6-17	R	0.0	0.1	0.6	0.6	2.4	12.0	0.1	0.1	0.6	1.0	3.7	19.3
	N	0.1	0.1	0.8	0.0	0.1	0.6	0.0	0.1	0.5	0.3	0.5	3.0
	Total	0.1	0.3	1.4	0.6	2.5	12.6	0.1	0.2	1.1	1.2	4.1	22.3
MU 6-30	R	0.1	0.2	0.6	1.6	5.8	34.8	0.2	0.4	2.8	3.4	15.2	95.2
	N	0.0	0.1	0.3	0.1	0.1	0.5	0.0	0.1	1.0	0.6	0.7	4.7
	Total	0.1	0.3	0.9	1.7	5.9	35.3	0.2	0.6	3.8	4.0	15.9	99.9
Total	R	3.0	8.2	32.2	25.4	93.7	532.7	1.4	8.7	52.3	45.5	151.8	846.4
	N	0.9	0.9	6.0	0.2	0.7	6.4	0.0	1.0	7.9	3.5	5.0	38.4
	Total	3.9	9.2	38.2	25.6	94.4	539.2	1.4	9.7	60.1	49.0	156.8	884.9

Note:

These management units cover an area of 3.7 million hectares compared to the 0.7 million hectares for the Nass South SRMP area. Data were allocated to the Nass South SRMP area assuming that 80% of Management Unit 6-16, and 5% of MU 6-24, MU 6-17 and MU 6-30 are within the Nass South SRMP area.

Source: Prepared by Pierce Lefebvre Consulting, based on MOE, Fish and Wildlife Branch, Summary Statistics Data Base, Hunter Harvest and Effort.

Table 44 Estimated Hunting Effort in Nass South SRMP - Annual Averages 1990- 2005

Hunting Effort in 4 WMUs Overlapping Nass South SRMP Area		White Tail Deer			Mule Deer			Black Bear			Grizzly Bear		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 6-14	R	3	23	81	8	47	181	7	15	73	1	6	37
	N							7	5	39	0	0	1
	Total	3	23	81	8	47	181	14	20	112	2	6	39
MU 6-16	R				0	2	13	14	23	113	2	9	59
	N							1	1	10	1	1	6
	Total	0	0	0	0	2	13	15	24	123	3	9	64
MU 6-17	R				0	2	9	3	10	53	3	8	60
	N							2	2	13	1	2	10
	Total	0	0	0	0	2	9	5	12	66	3	10	70
MU 6-30	R	11	93	674	5	48	293	11	25	120	3	8	54
	N							9	7	47	1	1	11
	Total	11	93	674	5	48	293	19	33	167	3	9	65
Total	R	14	116	755	14	99	495	34	73	358	9	30	210
	N	0	0	0	0	0	0	19	16	108	2	4	28
	Total	14	116	755	14	99	495	53	89	467	11	34	237

Hunting Effort in 4 WMUs Overlapping Nass South SRMP Area		Goat			Moose			Wolf			Total All Species		
		Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days	Animals Killed	Number of Hunters	Hunter Days
MU 6-14	R	4	12	40	8	35	136	6	15	45	36	152	593
	N	1	1	5	0	0	1	0	2	12	8	8	58
	Total	5	12	45	8	35	137	6	17	57	44	160	651
MU 6-16	R	3	9	36	29	105	599	1	9	58	49	157	878
	N	1	1	6	0	1	7	0	1	7	3	4	35
	Total	4	10	42	29	105	606	1	10	66	52	161	913
MU 6-17	R	1	3	13	11	48	239	2	3	12	19	73	385
	N	1	2	16	1	2	12	1	2	9	5	10	60
	Total	2	5	28	12	49	251	2	4	21	24	83	445
MU 6-30	R	1	4	12	33	116	696	4	8	56	68	304	1,904
	N	1	2	6	1	2	10	0	3	19	11	14	94
	Total	2	6	18	34	118	706	4	11	76	79	318	1,998
Total	R	10	28	101	80	303	1,670	13	35	171	173	685	3,760
	N	4	6	33	2	4	30	1	7	48	27	37	247
	Total	13	34	134	82	307	1,700	13	42	219	199	722	4,007

Data were allocated to the Nass South SRMP area assuming that 80% of Management Unit 6-16, and 5% of MU 6-24, MU 6-17 and MU 6-30 are within the Nass South SRMP area.

Source: Prepared by Pierce Lefebvre Consulting, based on MOE, Fish and Wildlife Branch, Summary Statistics Data Base, Hunter Harvest and Effort.

Table 45 Estimated Impacts of Guide-Outfitting in Nass South SRMP Area

Estimated Economic Impacts of Guided Outfitting in Nass South SRMP Area	2006 Estimate Per Guide-Outfitter in Skeena Area		Estimate for Nass South SRMP (Pro-Rated Based on Guided Hunting Days)
	Average per Guide-Outfitter	Net Economic Value (\$) per Guide-Outfitter	
Total Estimated Revenues to Guide-Outfitters	\$386,541	\$19,327	\$3,143
Total Wages and Salaries	\$148,360	\$7,418	\$1,206
Licenses	\$3,500	\$3,500	\$569
Estimated Net Economic Value		\$30,245	\$4,919
Total Direct Estimated FTEs	10 Jobs	4 FTEs	0.66 FTEs
Hunting Client Days	236 days		38.4 days

Note:

Section 1.1 of this report defines net economic value (NEV) and explains the NEV assumptions.

The estimate for the Nass South SRMP area is based on the number of guided hunting days estimated for the Nass South SRMP area based on the MOE hunting effort statistics, and the Skeena average per guide outfitter for that region.

Table 46 Economic Impacts of Skeena Guide Outfitting Sector

Skeena Guide-Outfitting Sector	2002	%	2006 Estimate	Per Guide
Sports & Recreation Revenues:	(\$ million)		(\$million)	\$
Hunting	\$11.40	75%	\$12.65	\$281,021
Adventure & Wildlife Viewing	\$0.27	2%	\$0.30	\$6,654
Freshwater Fishing	\$1.37	9%	\$1.52	\$33,839
Guest Ranch/ Trail Riding	\$0.61	4%	\$0.68	\$15,058
Land-Based Winter	\$0.34	2%	\$0.38	\$8,404
Other Sports and Recreation	\$1.12	7%	\$1.25	\$27,700
Sub-Total	\$15.12	100%	\$16.77	\$372,676
Retail Trade & Other Non-Operating	\$0.56		\$0.62	\$13,865
Total Revenues	\$15.68		\$17.39	\$386,541
Payroll	\$6.02	45%	\$6.68	\$148,360
Commodity & Production Taxes	\$0.33	2%	\$0.36	\$8,108
Operating Expenses	\$6.98	52%	\$7.74	\$171,969
Total Expenses	\$13.33	100%	\$14.78	\$328,437
Net Income	\$2.36		\$2.62	\$58,112
Client Days:				
Hunting	10,625			236
Non-Hunting	<u>8,662</u>			<u>192</u>
Total	19,287			429
Revenue per Client Day (Excluding Retail Trade)	\$784		\$870	
Total Employment (Head Count)				
Guides	45			1
Assistant Guides	239			5
Other	155			3
	439			10
FTEs				
Guides	45			1
Assistant Guides	64			1
Other	73			2
	183			4

Source of Skeena Region Data: Pacific Analytics Inc. 2003. *The Guide Outfitting Industry in British Columbia: An Economic Analysis of 2002 – Main Report*, pages 23 and 24; data are updated to 2006 dollars using the Consumer Price index for Canada.

Table 47 Expenditures and Net Economic Value per Recreation Day

Activity Type	Expenditures per Day	Net Economic Value per Day
Outdoor Activities in Natural Areas and Wildlife Viewing	\$45 - (EC-1996); Depends on activities: \$10 (locals hiking) to \$60 (locals ATV) (ORC-2003)	\$8.2 per day - (EC-1996)
Resident Hunting	\$50 - (EC-1996) \$123 - (ORC-2003)	\$17.90/day - (EC-1996) and \$55/day - (MELP-1998)
Resident Angling	\$29 - (EC-1996) \$31 - (ORC-2003)	\$12.2 - (EC-1996)
Wildlife Viewing	\$5 - (ORC-2003) \$18 - (EC-1996) \$22 - (MELP-1998)	\$7.6 - (EC-1996) and \$44/day (MELP-1998)
Total		\$10 to \$20 (EC-1996); \$50 range (MELP-1996)

Source:

- Expenditures and net economic value: Environment Canada (EC). 1996. *The Importance of Nature to Canadians: The Economic Significance of Nature Related Activities in 1996*. www.ec.gc.ca, web site accessed February 2004.
- Net Economic Value: Reid, Roger. 1998. *Economic Value of Wildlife Activities in British Columbia, 1996*. BC Ministry of Environment, Lands and Parks (MELP), Victoria. Tables 21 (page 3) & 23 (page 26); BC Environment 1995. *BC Resident Hunter Survey*, BC Ministry of Water, Land and Air Protection (WLAP). 2001. *Economic Benefits of BC's Provincial Parks*.
- The Economic Planning Group et al. 2003. *Economic Impact Analysis of Outdoor Recreation on British Columbia's Central Coast, North Coast and Queen Charlotte Islands/Haida Gwaii*. Outdoor Recreation Council (ORC) of British Columbia, page 102.

APPENDIX 5 COMMUNITY SUSTAINABILITY

This appendix provides detailed population data as well as employment and labour force data for the Nass South SRMP area and neighbouring communities. Throughout this appendix, the data are deemed to be for the Nass South SRMP, even though much of the population and demographic data are for the Nass LRMP area, which includes the Nass South SRMP area as well as the Upper Nass region. Since there are no communities in the Upper Nass LRMP area, data for the Nass South SRMP would likely be comparable to data from the Nass LRMP area. The Bell II Lodge is in the Upper Nass area, but not in the Nass South SRMP, but some of the activities that are based out of Bell II such as heli-skiing take place in the Nass South SRMP.

The following describes the tables included in this Appendix.

Tables 48, 49 and 50: Population and Labour Force Data

Table 48 shows population and membership data collected by the Skeena Native Development Society (SNDS) for various First Nations near the plan area. Table 49 summarizes selected Canada Census data for communities in the Nass South SRMP area and surrounding region. This includes: 1996, 2001 and 2006 population, and 2006 number of private dwellings, total labour force, number of employed people, and unemployment rate (as a % of the labour force). This table also includes population data from the Skeena Native Development Society, and an estimate of the distance between each community and Cranberry Junction, which is just outside the southern boundary of the Nass South SRMP area.

Table 50 report labour force data collected by the SNDS for various First Nations communities near the Plan area.

Tables 51 and 52: Regional Employment and Income Dependencies

BC Stats has estimated the percentage of jobs, before tax employment and other income, and after tax-income that depends on basic economic sectors based on the 2001 Canada Census data.⁷² Table 51 provides the dependency data for the Nass South SRMP area.

BC Stats divides BC into 63 Local Areas. Three of these areas are of relevance to the Nass South SRMP region, and Table 52 shows the income dependencies for the following 3 Local Areas.

- **Stewart & Nisga'a Local Area:** This includes the Nass South SRMP area including Stewart and the KSRD Area A, the Nisga'a communities of Gingolx (Kincolith), Laxgalts'ap (Greenville), Gitwinksihlkw, New Aiyansh, and Nisga'a (Nass Camp and other Nisga'a); the Kitimat-Stikine Regional District (KSRD) Electoral Area D, Telegraph Creek 6 & 6A, Kluachon Lake 1*, Gitzault 24*, Iskut 6 and Guhthe Tah 12. (Note:* no population reported for 2006).
- **Gitanyow/ Gixtsan & Hazelton Local Area:** This includes Hazelton, New Hazelton, Gitanmaax, Gitanyow (Kitwancool), Gitsegukla, Gitwangak (Kitwanga), Sik-e-dakh (Glen

⁷² Horne, Dr. Garry. BC Stats. 2004. *British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas*. BC Ministry of Management Services.

Vowell), Hagwilget, Kispiox, Moricetown (1 & 2), KSRD - Electoral Area B (includes South Hazelton, Cedarvale), Bulkley River 19 and Babine 17.

- **Kitimat-Terrace Local Area:** This includes the Terrace District Municipality, First Nations communities near Terrace (Kshish 4, Kulspai 6), KSRD - Electoral Area E (Near Terrace), Kitasoo 1, Kitimaat 2, Kitimat District Municipality, and KSRD - Area C (includes Rosswood, Usk).

Tables 53 & 54: Employment Dependencies, 2001 and Estimates for 2006 Based on Reduced Timber Harvest

Table 53 provides data on employment dependencies for the Nass SRMP, Kispiox LRMP (Kispiox & Cranberry TSAs), Kalum South LRMP, the North Coast LRMP and Cassiar Stikine; the table provides BC Stats data for 2001 and an estimate of 2006 assuming that all logging employment is directly correlated to timber harvest volumes, and our knowledge of wood processing and pulp and paper employment between those years. Table 54 shows the impacts on regional employment dependencies of the dropping forest employment.

Table 55: Community Well Being Index for Communities in Nass South Surrounding Area

Table 55 reports the Community Well Being Index developed by Indian and Northern Affairs Canada based on Canada Census data on income, education, housing and labour force activity for communities in the Nass South SRMP and surrounding area.

Table 48 Population for First Nations Communities Near Nass South SRMP Area

First Nations Population Data for Nass South SRMP and Surrounding Area	Population - Total Community Residency (from Skeena Native Development Society)				2006 Membership Data (from Skeena Native Development Society)		
	1997	2000	2006	% Change 1997-2006	Total Band Membership	First Nations Residency	Population as a % of Total Band Members
Gitanyow/ Gitxsan Nearby Communities:							
Gitanmaax	754	750	838	11%	2,042	808	40%
Gitanyow (Kitwancool)	401	399	422	5%	705	407	58%
Gitsegukla	558	491	479	-14%	874	473	54%
Gitwangak (Kitwanga)	524	472	549	5%	1,088	534	49%
Sik-e-dakh (Glen Vowell)	203	226	234	15%	381	222	58%
Hagwilget	264	293	239	-9%	675	234	35%
Kispiox	653	720	798	22%	1,430	770	54%
Moricetown (1 & 2)	734	784	648	-12%	1,779	630	35%
Sub-Total - Gitanyow/ Gitxsan Nearby Communities	4,091	4,135	4,207	3%	8,974	4,078	45%
Nisga'a Nearby Communities:							
Gingolx (Kincolith)	458	342	400	-13%	1,857	390	21%
Laxgalt's'ap (Greenville)	655	614	592	-10%	1,739	896	52%
Gitwinksihlkw	243	252	242	0%	360	230	64%
New Aiyansh	915	1,070	952	4%	1,580	580	37%
Sub-Total - Nisga'a Communities:	2,271	2,278	2,186	-4%	5,536	2,096	38%
Tsimshian (Near Terrace)							
Kitselas	234	264	312	33%	495	298	60%
Kitsumkalum	245	228	273	11%	647	255	39%
First Nations communities near Terrace	479	492	585	22%	1,142	553	48%
Total - Key Impact Area	6,841	6,905	6,978	2%	15,652	6,727	43%

Source: Skeena Native Development Society, Labour Market Census, various years, accessed through web site: www.snds.bc.ca.

Table 49 Population and Labour Force Data for Nass South SRMP Primary Impact Area

Population Data for Nass South SRMP and Surrounding Area	Population (from Canada Census Data)					Population - Total Community Residency (from Skeena Native Development Society Data)					2006 Private Dwellings (Canada Census Data)			2006 Labour Force from Canada Census			Km from Cranberry Junction
	1991	1996	2001	2006	% Change 1996-2006	1997	2000	2006	% Change 1997-2006	Diff. with Census Data - 2006	Total Dwellings	Dwellings Occupied by Usual Residents	% of Occupied Dwellings	Total	Employed	% Unemployed	
Kitimat-Stikine RD																	
Nass South SRMP Area																	
KSRD - Electoral Area A/ Meziadin Junction, Cranberry Junction and Alice Arm)	N/A	143	81	46	-68%						65	20	31%	28	26	8.2%	
Stewart	1,151	858	661	496	-42%						307	224	73%	305	280	8.2%	145
Sub-Total - Nass South SRMP Area		1,001	742	542	-46%						372	244	66%	333	306	8.2%	
Gitanyow/ Gitksan Nearby Communities																	
Gitanaax	555	638	693	723	13%	754	750	838	11%	-16%	242	225	93%	290	190	34.5%	123
Gitanyow (Kitwancool)	308	408	369	387	-5%	401	399	422	5%	-9%	104	99	95%	145	70	51.7%	44
Gitsegukla	448	506	432	721	42%	558	491	479	-14%	34%	223	216	97%	210	135	35.7%	88
Gitwangak (Kitwanga)	424	481	475	465	-3%	524	472	549	5%	-18%	155	140	90%	195	115	41.0%	73
Sik-e-dakh (Glen Vowell)	168	177	171	225	27%	203	226	234	15%	-4%	76	66	87%	80	55	31.3%	135
Hagwilget	185	262	237	229	-13%	264	293	239	-9%	-4%	92	83	90%	100	60	40.0%	118
Kispixox	532	553	651	617	12%	653	720	798	22%	-29%	216	193	89%	235	140	40.4%	133
Moricetown (1 & 2)	N/A	410	349	397	-3%	734	784	648	-12%	-63%	127	121	95%	150	135	10.0%	138
Sub-Total - Gitanyow/ Gitksan Nearby Communities	N/A	3,435	3,377	3,764	10%	4,091	4,135	4,207	3%	-12%	1,235	1,143	93%	1,405	900	35.9%	
Nisga'a Communities																	
Gingolx (Kincolith)	248	318	339	341	7%	458	342	400	-13%	-17%	114	103	90%	150	80	46.7%	128
Laxgalts'ap (Greenville)	N/A	398	467	474	19%	655	614	592	-10%	-25%	132	131	99%	234	165	29.3%	97
Gitwinksihkw	207	231	212	201	-13%	243	252	242	0%	-20%	58	57	98%	115	90	21.7%	65
New Aiyansh	621	739	716	806	9%	915	1,070	952	4%	-18%	254	237	93%	400	300	25.0%	51
Nass Camp (Other Nisga'a)	N/A	98	85	97	-1%						45	45	100%	48	34	29.3%	50
Sub-Total - Nisga'a Communities:	N/A	1,784	1,819	1,919	8%	2,271	2,278	2,186	-4%	-14%	603	573	95%	947	669	29.3%	
Other Nearby Communities																	
Hazelton	339	347	345	293	-16%						154	119	77%	195	185	5.1%	123
New Hazelton	786	822	750	627	-24%						309	260	84%	335	270	19.4%	116
Terrace District Municipality	11,433	12,783	12,019	11,320	-11%						4,682	4,321	92%	5,995	5,440	9.3%	164
Tsimshian Communities Near Terrace	302	344	398	437	27%	479	492	585	22%	-34%	162	153	94%	219	157	28.3%	
KSRD - Electoral Area B (includes South Hazelton, Cedarvale)	N/A	2,098	1,948	1,618	-23%						817	690	84%	845	675	20.1%	
KSRD - Area C (includes Rosswood, Usk & Area Near Terrace)		3,302	3,008	2,827	-14%						1,325	1,089	82%	1,395	1,245	10.8%	
KSRD - Electoral Area E (Near Terrace)	N/A	4,722	4,475	4,402	-7%						1,737	1,629	94%	2,230	1,950	12.6%	
Sub-Total Other KSRD Nearby Communities	N/A	24,418	22,943	21,524	-12%						9,186	8,261	90%	11,214	9,922	11.5%	
Total - Primary Impact Area	N/A	30,638	28,881	27,749	-9%						11,396	10,221	90%	13,899	11,797	15.1%	
KSRD - Not Primary Impact Area:																	
Kitimat District Municipality	11,305	11,136	10,285	8,987	-19%						4,256	3,627	85%	4,740	4,290	9.5%	222
KSRD - Area D (North of Nass South SRMP Area)		100	88	91	-9%						70	39	56%	56	51	8.2%	
Other KSRD (Not Impact Area)		1,744	1,622	1,172	-33%						537	483	90%	645	467	27.7%	
Total KSRD	41,535	43,618	40,876	37,999	-13%						16,259	14,370	88%	19,340	16,605	14.1%	
OTHER COMMUNITIES NEARBY																	
Prince Rupert Census Agglomeration	17,359	17,414	15,302	13,392	-23%						6,201	5,289	85%	7,230	6,280	13.1%	369
Lax Kw'alaams	1,019	785	667	679	-14%	1,096	1,081	828	-24%	-22%	229	220	96%	227	130	42.8%	
Other North Coast	(a)	764	671	663	-13%						281	198	70%	222	127	42.8%	
Stikine Region	(a)	1,393	1,316	1,109	-20%						794	491	62%	599	520	13.1%	
Total KSRD, and Other Communities Nearby	59,913	63,974	58,832	53,842	-16%						23,764	20,568	87%	27,618	23,662	14.3%	

Notes to Table 49:

(a) Boundaries changed in 1996; population included in Kitimat-Stikine

1. Nass South SRMP area includes Stewart and KSRD Electoral Area A which includes Meziadin Junction and Cranberry Junction. Cranberry Junction is actually just outside the boundaries of the Nass South SRMP area.
2. KSRD: Kitimat-Stikine Regional District; the KSRD includes the Nass South SRMP area, the Gitanyow/Gitxsan and Nisga'a communities, Terrace, Hazelton and Surrounding Area, as well as other communities not designated to be in the Primary Impact Area such as Kitimat.
3. Prince Rupert Census Agglomeration includes the City of Prince Rupert and Port Edward, and they are part of the Skeena-Queen Charlotte Regional District. The Stikine region includes the unincorporated communities of Atlin, Dease Lake, Good Hope Lake, and Lower Post Mining, as well as File Mile Point 3, Liard River 3, Tahltan 1, and the Stikine Regional District Electoral Area.
4. Other North Coast includes Skeena-Queen Charlotte Regional District Electoral Areas A (Metlakatla & Other) & Electoral Area C (Kitkatla & Other), Dolphin Island, Hartley Bay.

Source: Canada Census, various years; and Skeena Native Development Society, Labour Market Census, various years, accessed through web site: www.snds.bc.ca.

Table 50 2006 Labour Force by First Nations Community in Nass South Surrounding Area

2006 Labour Force and Employment by Community	2006 Labour Force				2006 Employment by Basic Sector						
	Total	Employed	Unemployed	% Unemployed	Fisheries	Forestry	Mining	Public Sector	Tourism	Other/Unknown	Total
Gitanyow/ Gitxsan Nearby Communities											
Gitanmaax	370	159	235	64%	4	10	6	94	0	45	159
Gitanyow (Kitwancool)	178	57	116	65%	1	14	0	31	1	10	57
Gitsegukla	249	72	182	73%	0	10	1	47	0	14	72
Gitwangak (Kitwanga)	270	58	212	79%	0	10	1	37	0	10	58
Sik-e-dakh (Glen Vowell)	91	33	58	64%	1	4	3	22	0	3	33
Hagwilget	106	46	71	67%	0	3	0	29	0	14	46
Kispiox	307	103	213	69%	2	1	13	74	0	13	103
Moricetown (1 & 2)	308	169	150	49%	0	73	4	67	2	23	169
Sub-Total - Gitanyow/ Gitxsan Nearby Communities	1,879	697	1,237	66%	8	125	28	401	3	132	697
Nisga'a Communities											
Gingolx (Kincolith)	189	84	113	60%	4	0	2	65	0	13	84
Laxgalt's'ap (Greenville)	307	131	225	73%	10	10	0	72	1	38	131
Gitwinksihlkw	110	85	45	41%	15	2	2	56	4	6	85
New Aiyansh	448	266	255	57%	36	6	0	173	0	51	266
Sub-Total - Nisga'a Communities:	1,054	566	638	61%	65	18	4	366	5	108	566
Tsimshian (Near Terrace)											
Kitselas	100	48	60	60%	0	5	0	31	1	11	48
Kitsumkalum	119	76	60	50%	8	6	1	39	0	22	76
First Nations communities near Terrace	219	124	120	55%	8	11	1	70	1	33	124
Total - Key Impact Area	3,152	1,387	1,995	63%	81	154	33	837	9	273	1,387

Source: Skeena Native Development Society, Labour Market Census, 2006, accessed through web site: www.snds.bc.ca.

Table 51 Nass South SRMP Area Employment and Income Dependencies, 2001

NASS SOUTH SRMP AREA DEPENDENCIES, 2001										
Direct and Indirect Impacts	Forestry	Mining	Fish & Trapping	Agriculture & Food	Tourism	Public Sector	Other Basic	Transfer Payments	Other Non Employment Income (ONEI)	Total
Employment (# of Jobs)										
Direct (#)	58	25	0	0	82	131	56			352
Indirect (#)	5	5	0	0	5	11	4			30
Direct & Indirect (#)	63	30	0	0	87	142	60			382
% Direct & Indirect	16%	8%	0%	0%	23%	37%	16%			100%
Before-Tax Income (\$ M)										
\$	\$1.5	\$2.1	\$0.0	\$0.0	\$0.9	\$5.2	\$1.4	\$1.5	\$0.2	\$12.8
%	11.7%	16.4%	0.0%	0.0%	7.0%	40.6%	10.9%	11.7%	1.6%	100%
After Tax Income (\$M)										
\$	\$1.4	\$1.7	\$0.0	\$0.0	\$0.9	\$4.3	\$1.1	\$1.3	\$0.2	\$10.9
%	12.8%	15.6%	0.0%	0.0%	8.3%	39.4%	10.1%	11.9%	1.8%	100%

Note: Data are for the "Nass LRMP area" (or Nass TSA) and not the Nass South SRMP area. The Nass TSA includes the Nass South SRMP area as well as the northern portion of the Nass TSA, but since the northern portion contains only one small settlement (Bell II Lodge), the demographics and socio-economic data for the entire Nass TSA should be reflective of the Nass South SRMP area.

Table 52 Income Dependencies for Nass South SRMP Surrounding Area

Percent Dependencies by Basic Sector - Based on After Tax Income for 1991, 1996 and 2001											
Year	Forestry	Mining	Fish & Trapping	Agriculture & Food	Tourism	Public Sector	Other Basic	Transfer Payments	Other Non Employment Income	Total	
Nass SRMP Area											
2001	13	16	0	0	8	39	10	12	2	100	
Stewart & Nisga'a Local Area (Incl. Nass SRMP Area)											
2001	9	7	3	0	5	41	8	22	5	100	
1996	25	9	3	0	7	37	12	5	2	100	
1991	17	19	1	0	8	22	18	9	6	100	
Kispiox LRMP Area											
2001	28	2	2	1	2	34	3	21	6	99	
Gitanyow/Gitxsan & Hazelton Local Area											
2001	29	3	1	1	3	32	3	24	5	101	
1996	36	2	2	1	7	35	5	10	3	101	
1991	39	0	1	2	3	20	12	13	9	99	
Kalum South LRMP											
2001	19	20	0	0	5	26	9	13	7	99	
Kitimat/Terrace Local Area											
2001 Total Area	19	20	0	0	5	26	10	13	7	100	
2001 - Kitimat	18	39	0	0	2	17	7	9	7	99	
2001 - Terrace	22	4	0	0	8	32	12	14	8	100	
1996	24	17	0	1	5	22	13	11	5	98	
1991	21	14	1	1	4	21	13	15	11	101	

Note: Data for the Kalum Forest District are the same as for the Kitimat-Terrace Local Area since those two communities dominate in terms of population and economic base. Source: Horne, Dr. Garry, BC Stats, *British Columbia's Heartland at the Dawn of the 21st Century*, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas, 2004, 105 pages. Also, Horne, Dr. Garry, BC Stats, 2001 Economic Dependency Tables for MSRM/LRMP Areas, 2004, 19 pages.

Table 53 Forest Sector Employment Impacts for BC Northwest Region, 2001 & 2006

2001 Forestry Impacts	Nass SRMP	Kispiox LRMP	Kalum South	North Coast LRMP	Cassiar Iskut-Stikine	Total
Total Direct Jobs:						
Logging	58	415	716	138	19	1,346
Pulp and Paper		4	718	788	1	1,511
Other Wood Mfg		<u>240</u>	<u>548</u>	<u>76</u>	<u>15</u>	879
Total Direct	58	659	1,982	1,002	35	3,736
Indirect Jobs						
Logging	5	35	126	28	2	
Pulp and Paper		2	427	522	0	
Other Wood Mfg		<u>57</u>	<u>158</u>	<u>25</u>	<u>2</u>	
Total Indirect	5	94	711	575	4	1,389
Total Direct and Indirect Jobs	63	753	2,693	1,577	39	5,125
Non-Basic	8	104	719	463	2	1,296
Total Direct, Indirect & Induced Jobs	72	857	3,412	2,039	41	6,421
2006 Estimated Forestry Impacts	Nass SRMP	Kispiox LRMP	Kalum South	North Coast LRMP	Cassiar Iskut-Stikine	Total
Total Direct Jobs:						
Logging	30	294	461	47	19	851
Pulp and Paper			718	0		718
Other Wood Mfg		<u>120</u>	<u>274</u>	<u>0</u>	<u>0</u>	<u>394</u>
Total Direct	30	414	1,453	47	19	1,963
Indirect Jobs						
Logging	3	16	29	1	1	50
Pulp and Paper			427			427
Other Wood Mfg	<u>0</u>	<u>29</u>	<u>79</u>	<u>0</u>	<u>0</u>	<u>108</u>
Total Indirect	3	44	535	1	1	584
Total Direct and Indirect Jobs	32	459	1,988	49	20	2,548
Non-Basic	4	63	531	14	1	614
Total Direct, Indirect & Induced Jobs	36	522	2,519	63	21	3,161
% drop in Harvest	-49%	-29%	-36%	-66%	-94%	

Notes:

- The 2006 direct logging employment is assumed to change proportionally with the timber harvest volumes for each region relative to 2001.
- In the North Coast LRMP area, the pulp mill in Prince Rupert and the Skeena sawmills have all shutdown reducing the employment in pulp and paper and other wood manufacturing to zero.
- In Kalum South, the Skeena mill has closed in Terrace; and as a result, for 2006, it is assumed that only half of the workers remain employed.
- Similarly, in Kispiox, the Carnaby sawmill in Hazelton has closed, and for 2006 it is assumed that only half of wood manufacturing workers remain employed.

Source: 2001: Dr. Garry Horne, BC Stats; 2006 estimates: prepared by Pierce Lefebvre Consulting.

Table 54 Employment Dependencies for BC Northwest Region, 2001 & 2006)

Employment Dependencies for BC Northwest - 2001 & 2006 (Estimate)									
Direct and Indirect Impacts	Forestry	Mining	Fish & Trapping	Agriculture & Food	Tourism	Public Sector	Other Basic	Total	% Change - 2001 to 2006 Est.
2001 Direct & Indirect Employment (# of Jobs)									
Nass South SRMP	63	30	0	0	87	142	60	382	
Kispiox LRMP	753	95	98	88	145	1,152	228	2,559	
Kalum South	2,693	2,419	165	56	1,524	4,656	1,713	13,226	
North Coast LRMP	1,577	27	1,352	70	1,025	2,788	2,588	9,427	
Cassiar Iskut-Stikine	39	8	16	2	14	107	16	202	
Total	5,125	2,579	1,631	216	2,795	8,845	4,605	25,796	
2001 Dependencies (%)									
Nass South SRMP	16%	8%	0%	0%	23%	37%	16%	100%	
Kispiox LRMP	29%	4%	4%	3%	6%	45%	9%	100%	
Kalum South	20%	18%	1%	0%	12%	35%	13%	100%	
North Coast LRMP	17%	0%	14%	1%	11%	30%	27%	100%	
Cassiar Iskut-Stikine	19%	4%	8%	1%	7%	53%	8%	100%	
Total	20%	10%	6%	1%	11%	34%	18%	100%	
2006 Direct & Indirect Employment (# of Jobs)									
Nass South SRMP	32	30	0	0	87	142	60	351	-8%
Kispiox LRMP	459	95	98	88	145	1,152	228	2,265	-12%
Kalum South	1,988	2,419	165	56	1,524	4,656	1,713	12,521	-5%
North Coast LRMP	49	27	1,352	70	1,025	2,788	2,588	7,899	-16%
Cassiar Iskut-Stikine	20	8	16	2	14	107	16	183	-9%
Total	2,548	2,579	1,631	216	2,795	8,845	4,605	23,219	-10%
Est. 2006 Dependencies (%)									
Nass South SRMP	9%	9%	0%	0%	25%	40%	17%	100%	
Kispiox LRMP	20%	4%	4%	4%	6%	51%	10%	100%	
Kalum South	16%	19%	1%	0%	12%	37%	14%	100%	
North Coast LRMP	1%	0%	17%	1%	13%	35%	33%	100%	
Cassiar Iskut-Stikine	11%	4%	9%	1%	8%	58%	9%	100%	
Total	11%	11%	7%	1%	12%	38%	20%	100%	

Source: 2001: Dr. Garry Horne, BC Stats; 2006 estimates: prepared by Pierce Lefebvre Consulting

Table 55 Well Being Index for Communities in Nass South Surrounding Area

Well Being Index for Nass South SRMP and Surrounding Area	Community Well Being Index (CWB) - 2001				
	Income Score	Education Score	Housing Score	Labour Force Activity	CWB
Kitimat-Stikine RD - Primary Impact Area					
Nass South SRMP Area					
KSRD - Electoral Area A/ Meziadin Junction, Cranberry Junction and Alice Arm)					85
Stewart	79	82	86	82	82
Gitanyow/ Gitxsan Nearby Communities					
Gitanmaax	60	78	74	69	70
Gitanyow (Kitwancool)	45	70	60	62	59
Gitsegukla	43	70	74	52	60
Gitwangak (Kitwanga)	34	75	70	64	61
Sik-e-dakh (Glen Vowell)					72
Hagwilget					69
Kispiox	53	77	73	72	69
Moricetown (1 & 2)					64
Nisga'a Communities					
Gingolx (Kincolith)					
Laxgalts'ap (Greenville)	54	80	84	68	72
Gitwinksihlkw					78
New Aiyansh	60	82	69	73	71
Nass Camp (Other Nisga'a)					77
Other Nearby Communities					
Hazelton	80	96	80	86	85
New Hazelton	71	80	94	77	80
Terrace District Municipality	80	85	94	84	86
Tsimshian Communities Near Terrace					
KSRD - Electoral Area B (includes South Hazelton, Cedarvale)	75	83	87	80	81
KSRD - Electoral Area E (Near Terrace)	77	85	92	83	84
KSRD - Not Primary Impact Area					
Kitimat District Municipality	86	85	95	84	88
KSRD - Area C (includes Rosswood, Usk)	82	86	90	84	85
KSRD - Area D					79
Other Community Nearby					
Prince Rupert	79	83	91	85	85
Port Edward	69	75	87	69	75
Lax Kw'alaams	52	61	75	58	62
BC Average					
BC First Nations Average Score					70
Lowest BC Community Score (Treaty 8 FN community of Halfway River)					49
Highest BC Community Score (Whistler)					95

Based on 2001 Canada Census Data.

Source: Indian and Northern Affairs Canada's Research and Analysis Directorate.

APPENDIX 6 GEOGRAPHIC INFORMATION SYSTEM (GIS) DATA

Nass South SRMP Area Statistics		GRAND TOTAL in Plan Area	Private Lands	Federal Lands and I.R.	Existing Parks and Protected Areas	Hanna Tintina Protected Area	OGMAs	FEN Zones (Excluding OGMA or PA areas)	General Mgmt Areas
Values									
Total Area (ha)		662,509	1,564	271	5,203	24,262	33,337	23,502	574,371
Forests (nass_srmf_thlb_feb08.shp)									
THLB (ha) - TSR2 (thlb_ha_for_incl_fact > 0)		136,603	2	0	0	5,379	7,150	4,176	119,896
Operable Forest Lands (ha) (as per Planning Table) (operable = 'yes')		185,122	6	0	0	7,848	9,993	6,056	161,219
Inoperable Lands for Forestry (ha) (as per Planning Table) (operable = '')		477,387	1,396	270	0	16,414	23,343	17,443	418,520
Visual Quality Objectives (ha) (nass_srmf_scenic_areas)									
Preservation (rec_evqo_c = 'p')		19,804	39	0	0	0	1,089	1,352	17,325
Retention (rec_evqo_c = 'r')		13,359	17	0	0	2,858	1,499	125	8,860
Partial Retention (rec_evqo_c = 'pr')		14,895	40	0	0	2,477	990	287	11,100
Modification (rec_evqo_c = 'm')		22,410	0	0	0	3,850	1,147	864	16,549
Non-Timber Forest Products									
Mushroom Harvesting/Management Areas (ha) (nass_srmf_pine_mush_surrogate)		17,571	0	0	0	89	1,563	554	15,365
Minerals									
Metallic Mineral Potential (ha) (Level 1) (nass_srmf_minpot)									
High (grp_label)		311,930	1,083	186	581	0	8,034	2,152	299,894
Moderate		307,408	315	82	4,622	24,262	20,537	19,219	238,371
Low		42,627	0	0	0	0	4,766	2,128	35,733
Industrial Mineral Potential (ha) (nass_srmf_iminpot)									
High (grp_label)		207	0	0	0	0	0	0	207
Moderate		135,113	361	66	219	24,262	5,151	5,023	100,031
Low		526,644	1,038	203	4,984	0	28,186	18,476	473,758
Mineral Tenures (ha) (nass_srmf_min_ten)									
Mineral Tenures (ha)		323,472	1,109	114	235	1,417	8,297	1,661	310,638
ARIS (nass_srmf_aris)									
Assessment Report Sites (number of sites)		508	4	0	0	0	24	1	479
Expenditures (\$) (work_cost)		30,647,421	363,667	0	0	0	562,224	7,200	29,714,331
Metallic Mineral Occurrences (nass_srmf_minfil)									
Developed Prospect (status_desc)		12	0	0	0	0	0	0	12
Past Producer		41	2	0	0	0	5	0	34
Producer		0	0	0	0	0	0	0	0
Prospect		58	2	0	0	0	6	0	50
Showing		210	2	0	0	0	12	2	194
Total Occurrences		321	6	0	0	0	23	2	290
Gas Potential (nass_srmf_basins)									
Bowser Basin Area (ha)		348,065	314	82	4,622	24,262	25,792	21,217	271,776
Tourism and Recreation									
Tourism Facilities (nass_srmf_tourrec_fac) Number of Sites		10	7	1	0	0	0	0	2
Tourism Features (nass_srmf_tourrec_fea) Number of Sites		9	0	0	0	3	0	1	5
Commercial Recreation Tenures (ha) (...cr_fshwter..., ...cr_heliski, ...cr_mtnneer)		259,190	860	14	0	9,126	6,002	1,692	241,497
Kilometres of Trail (nass_srmf_fsrec_trails)		14	0	0	0	0	6	0	8
Tourism Opportunity (ha) N/A									
High									
Medium									
Low									
Recreation Opportunity Spectrum (ha) (nass_srmf_ros)									
Roaded Modified (rec_opp_sp = 'rm')		191,066	626	0	362	12,891	10,940	13,559	152,689
Roaded Natural (rec_opp_sp = 'rn')		1	0	0	0	0	0	0	1
Primitive (rec_opp_sp = 'p')		198,060	14	0	0	75	4,291	67	193,614
Rural (rec_opp_sp = 'r')		13,205	287	138	359	1,701	58	2,707	7,955
Semi Primitive Motorized (rec_opp_sp = 'spm')		148,557	461	55	4	5,912	6,866	3,640	131,620
Semi Primitive Non-Motorized (rec_opp_sp = 'spnm')		107,520	15	78	449	3,682	11,175	3,525	88,596
Unclassified (rec_opp_sp = 'ua')		4,099	0	0	4,030	0	7	1	61
Wildlife									
High & Moderate Value Grizzly Bear Habitat (ha) (nass_srmf_griz_wha, grz_rating = 'h' or 'vh')		26,944	14	0	62	1,404	1,380	5,766	18,319
Moose Winter Range (ha) (nass_srmf_mwr)		20,572	20	0	28	1,376	427	7,814	10,907
Mountain Goat Winter Range (ha) (nass_srmf_gwr)		33,378	0	0	0	6	1,212	626	31,534
Gitanow House Territories (nass_srmf_GHT)									
Wii Litsxw		161,949	378	0	264	24,262	5,753	7,942	123,350
Luux Hon		62,055	7	0	0	0	5,972	4,489	51,586
Gamlakyeltxw		80,773	4	0	0	0	6,143	7,057	67,569
Haitimsxw		7,813	0	0	4,403	0	175	58	3,176
Malii/Axwindesxw		30,441	0	0	0	0	3,015	1,146	26,279
Gwaas Hla'am/ Bii Yosxw		47,887	1	0	0	0	3,725	2,457	41,704
Gitanow Cultural Values									
Kilometres of Trail (nass_srmf_gitanow_tus_line) Km		118	0	0	2	22	2	12	80
Traditional Use Sites (nass_srmf_gitanow_tus_point) No. Sites		16	0	0	1	0	0	11	4
Archaeological Sites (nass_srmf_arch) Number of Sites		16	0	0	2	0	0	5	9
Nisga'a - Nass Wildlife Area									
Total Area (ha) (nass_srmf_nbdwtwma)		492,787	558	270	5,052	23,222	30,498	21,054	412,134

Notes:

THLB (Timber Harvesting Land Base) including all Partial and Contributing Area

Source: Prepared by BC MAL based on various databases from MOFR, MEMPR (minfile database), and other sources, June 2008.

Nass South SRMP Area Statistics by Gitanyow House Territories	GRAND TOTAL in Plan Area	Private Lands	Federal Lands and I.R.	Wii Litswx	Luux Hon	Gamlakye txw	Haitsimsxw	Malii/Axwinde sxw	Gwaas Hla'am/ Bii Yosxw	Crown Lands Not in Gitanyow House Territories, nor Private nor Federal
Values										
Total Area (ha)	662,509	1,564	271	161,571	62,047	80,779	7,813	30,441	47,886	270,138
Forests										
THLB (ha) - TSR2	136,603	2	0	28,116	22,399	52,024	2,538	12,649	2,402	16,473
Operable Forest Lands (ha) (as per Planning Table)	185,122	6	0	39,696	28,742	66,696	2,825	18,099	4,214	24,842
Inoperable Lands for Forestry (ha) (as per Planning Table)	477,387	1,396	270	121,875	33,305	14,071	4,987	12,342	43,672	245,469
Visual Quality Objectives (ha)										
Preservation	19,804	39	0	6,858	0	0	0	0	0	12,908
Retention	13,359	17	0	7,853	0	408	664	0	5	4,413
Partial Retention	14,895	40	0	4,271	504	9,550	0	0	0	530
Modification	22,410	0	0	10,624	2,935	6,517	0	2,334	0	0
Non-Timber Forest Products										
Mushroom Harvesting/Management Areas (ha)	17,571	0	0	875	5,533	6,832	397	1,505	227	2,203
Minerals										
Metallic Mineral Potential (ha) (Level 1)										
High	311,930	1,083	186	51,615	10,353	0	0	0	38,604	210,089
Moderate	307,408	315	82	106,308	51,695	67,000	7,813	7,133	9,277	57,785
Low	42,627	0	0	3,648	0	13,769	0	23,308	0	1,903
Industrial Mineral Potential (ha)										
High	207	0	0	0	0	0	0	0	0	207
Moderate	135,113	361	66	97,939	10,353	1,028	0	4,861	8,403	12,102
Low	526,644	1,038	203	63,632	51,695	79,741	7,813	25,580	39,484	257,461
Mineral Tenures (ha)										
Mineral Tenures (ha)	323,472	1,109	114	64,529	12,928	18	0	25	35,581	209,168
ARIS										
Assessment Report Sites	508	4	0	47	11	0	0	0	16	430
Expenditures (\$)	30,647,421	363,667	0	4,126,105	660,688	0	0	0	188,019	25,308,943
Metallic Mineral Occurrences										
Developed Prospect	12	0	0	0	0	0	0	0	0	12
Past Producer	41	2	0	1	0	0	0	0	0	38
Producer	0	0	0	0	0	0	0	0	0	0
Prospect	58	2	0	3	1	0	0	0	0	52
Showing	210	2	0	18	1	0	0	0	1	188
Total Occurrences	321	6	0	22	2	0	0	0	1	290
Gas Potential										
Bowser Basin Area (ha)	348,065	314	82	109,934	51,635	78,490	7,813	30,441	9,262	60,094
Tourism and Recreation										
Tourism Facilities	10	7	1	0	0	0	0	0	0	2
Tourism Features	9	0	0	5	0	0	0	1	0	3
Commercial Recreation Tenures (ha)	259,389	860	14	83,182				266	7,131	167,936
Kilometres of Trail	15	0	0	0	0	0	0	2	0	13
Tourism Opportunity (ha)										
High										
Medium										
Low										
Recreation Opportunity Spectrum (ha)										
Roaded Modified	191,066	626	0	43,270	32,593	67,755	3,701	15,412	3,876	23,833
Roaded Natural	1	0	0	0	0	1	0	0	0	0
Primitive	198,060	14	0	62,313	9,215	0	0	0	37,610	88,909
Rural	13,205	287	138	5,239	0	4,675	0	209	0	2,656
Semi Primitive Motorized	148,557	461	55	31,728	10,635	5,447	0	3,493	1,002	95,736
Semi Primitive Non-Motorized	107,520	15	78	19,207	9,611	2,890	18	11,326	5,399	58,976
Unclassified	4,099	0	0	0	0	5	4,094	0	0	0
Wildlife										
Very High & High Value Grizzly Bear Habitat (ha)	10,414	14	0	4,343	2,191	2,272	83	888	417	207
Moose Winter Range (ha) (nass_smp_mwr)	20,572	20	0	8,170	3,748	6,569	0	27	1,446	591
Mountain Goat Winter Range (ha)	33,378	0	0	9,283	3,032	699	0	437	766	19,160
Nass South SRMP Designated Areas										
Hanna-Tintina Protected Area	24,262	0	0	24,262	0	0	0	0	0	0
Old Growth Management Areas	33,337	0	0	5,753	5,972	6,143	175	3,015	3,725	8,553
Forest Ecosystem Network (FEN) Hydriparian Zones, Exclusively	23,502	0	0	7,942	4,489	7,057	58	1,146	2,460	350
General Management Areas	574,371	0	0	123,366	51,586	67,569	3,176	26,279	41,704	260,691
Gitanyow Cultural Values										
Kilometres of Trail	118	0	0	63	29	19	0	0	4	4
Traditional Use Sites (Note 1)	16	0	0	0	2	8	1	0	0	5
Archaeological Sites	16	0	0	8	1	6	0	0	0	1
Nisga'a - Nass Wildlife Area										
Total Area (ha)	492,787	558	270	119,716	62,047	80,768	7,585	30,398	47,885	143,559

Note 1: A separate data base not included in the GIS analysis identifies some 40 traditional use sites in the Wii Litswx house territory. traditional use sites exclude those in the Wii Litswx house territory.

APPENDIX 7 LIST OF SELECTED REFERENCES

Ascot Resources Ltd., 2005, <i>Swam Point Aggregate Mine, Environmental Assessment Certificate Application</i> .
BC Ministry of Energy, Mines and Petroleum Resources, <i>BC Mining and Mineral Exploration Overview 2006</i> , 21 pages.
Bravi, Rebecca S., and Allen Gottesfeld, <i>Fall 2000 Pine Mushroom Harvest Productivity and Inventory Study, Gitanyow Traditional Territories</i> , prepared for Gitanyow Hereditary Chiefs, 22 pages.
BC Ministry of Agriculture and Lands, <i>Guidelines for Socio- Economic and Environmental Assessment (SEEA)</i> , 2007, 105 pages, available from: www.agf.gov.bc.ca/clad/strategic_land/econ_analysis/projects_pubs/cabinet/SEEA_guidelines.pdf
BC Ministry of Energy and Mines, <i>British Columbia Mining and Mineral Exploration Overview 2004</i> , 18 pages, 2004.
BC Ministry of Energy and Mines, <i>BC Mining Plan</i> , 2005, 41 pages.
BC Ministry of Energy, Mines and Petroleum Resources (MEMPR) (Paul Wojdak), <i>Exploration and Mining in British Columbia, 2006 – Northwest Region</i> , 2007, 18 pages.
BC Ministry of Energy, Mines and Petroleum Resources (MEMPR), (Tom Schroeter et al.), <i>Exploration and Mining in British Columbia, 2006 - BC Mining and Mineral Exploration Overview 2006</i> , 2007, 21 pages.
BC Ministry of Forests (S. Tedder, D. Mitchell, and S. Farran), <i>Seeing the Forest Beneath the Trees: The Social and Economic Potential of Non-Timber Forest Products and Services In the Queen Charlotte Islands/ Haida Gwaii</i> , 2000.
BC Ministry of Forests, <i>Nass Timber Supply Area Rationale for Allowable Annual Cut (AAC) Determination, Effective January 1, 1996</i> , available from: //www.for.gov.bc.ca/hts/tsr1/ration/tsa/tsa43/43Ra0018.htm#E10E5
BC Ministry of Forests, 2001, <i>Timber Supply Review, Nass Timber Supply Area Analysis Report</i> .
BC Ministry of Forests and Range, <i>Major Primary Timber Processing Facilities in BC</i> , 2005, 48 pages.
BC Ministry of Forests, March 25 th , 2003, <i>Notice to Exporters Concerning Order-In-Council (OIC) 121</i> .
BC MOF and MSRM, Chuck Rowan and Glenn Farenholtz, <i>Economic Implications of Stand Level Retention Recommendations Developed for the Central Coast LRMP Planning Process</i> , 2004, 21 pages.

BC MSRM, <i>Guiding Principles for Social, Economic and Environmental Assessment for Land and Resource Management Planning in BC</i> , 2003, Available from www.srmwww.gov.bc.ca/rmd/srdb/docs/guidingprinciplespdf . 13 pages.
Calibre Strategic Services, Rescan Environmental Services Ltd. and Rescan Tahltan Environmental Consultants, <i>Galore Creek Project Socio-Economic Impact Assessment</i> , prepared for NovaGold Canada Inc., March 2006, 232 pages.
Cambria Gordon Ltd., <i>Bear River Gravel Project – Glacier Aggregates Inc.</i> , submitted to the British Columbia Environmental Assessment Office, 2006, 40 pages.
City of Terrace Forestry Task Force Implementation Committee, <i>Final Report</i> , February 2004.
Dumont, Bill and Don Wright, <i>Generating More Wealth from British Columbia's Timber: A Review of British Columbia's Log Export Policies</i> , A report to British Columbia Minister of Forests and Range, 2006, 100 pages.
Fiera Ecological Consulting, Environmental Risk Assessment for the Nass South Sustainable Resource Management Plan Area, prepared for BC Ministry of Agriculture and Lands, June 2007.
G.E. Bridges & Associates Inc. and Robinson Consulting & Associates, <i>Northwest BC Mining Projects Socio-Economic Impact Assessment</i> , prepared for the BC Ministry of Small Business and Economic Development (Economic Analysis Branch), July 2005, 67 pages.
Horne, Dr. Garry, BC Stats, <i>British Columbia Provincial Economic Multipliers and How to Use Them</i> , 2005, 44 pages.
Horne, Dr. Garry, BC Stats, <i>2001 Economic Dependency Tables for MSRM/LRMP Areas</i> , 2004, 19 pages.
Horne, Dr. Garry, BC Stats, <i>British Columbia's Heartland at the Dawn of the 21st Century, 2001 Economic Dependencies and Impact Ratios for 63 Local Areas</i> , BC Ministry of Management Services, 2004, 105 pages.
Industrial Forestry Service Ltd., <i>South Nass SRMP Timber Supply Analysis Report & Information Package, Version 1</i> , BC Ministry of Agriculture and Lands, Integrated Land Management Bureau, Skeena Region, May 2008, 37 pages.
Pacific Analytics Inc., <i>The Guide Outfitting Industry in British Columbia: An Economic Analysis of 2002 – Main Report</i> , 2003, 43 pages.
Pearse, Dr. Peter H, <i>Ready for Change, Crisis and Opportunity in the Coastal Forest Industry, A Report to the Minister of Forests on British Columbia's Coastal Forest Industry</i> , BC Ministry of Forests, 2001.
Pierce Lefebvre Consulting and D.A. Ruffle & Associates Ltd., <i>Study of Pollution Prevention Opportunities in the Coastal Forest Industry with Respect to Dioxins and Furans</i> , Canadian Council of Ministers of the Environment, 2002, 63 pages.

Pierce Lefebvre Consulting and D.A. Ruffle & Associates Ltd., <i>Analysis of Woodflow in the Coast Forest Region, 2007 Update</i> , presented to the BC Ministry of Forests and Range, 2007, 63 pages.
Pierce Lefebvre Consulting, Stuart Gale & Associates and Brimar Consultants, <i>Socio-Economic Impact Assessment of the Provincial Government's Strategic Land Use Plans on Key Sectors in B.C.</i> , BC MSRM, 2001, 130 pages.
Pierce Lefebvre Consulting, <i>Morice Land & Resource Management Plan Socio-Economic and Environmental Assessment: Morice LRMP Table Final Land Use Recommendation</i> , MSRM Skeena Region, 2004, 143 pages.
Pierce Lefebvre Consulting, <i>Haida Gwaii/QCI Timber Harvest and Processing Employment Survey</i> , BC Ministry of Agriculture and Lands, 2005, 11 pages.
PriceWaterhouseCoopers, <i>The Mining Industry in British Columbia 2004</i> , 2005, 43 pages.
Red Chris Development Company Ltd., <i>Application for an Environmental Assessment Certificate – Red Chris Project</i> , submitted to BC Environmental Assessment Office, 2004.
Rescan Environmental Services Ltd. and Fortune Coal Limited, <i>Mount Klappan Coal Project Description</i> , submitted to BC Environmental Assessment Office, 2004.
Robert Hornal and Associates Ltd., <i>Red Chris Project Socio-Economic Assessment Supplement – Further Assessment of Potential Tourism Impacts</i> , prepared for Red Chris Development Co. Ltd., submitted to BC Environmental Assessment Office, 2005.
Robinson Consulting and Associates Ltd. and Jackie Hamilton and Associates, <i>Base Case Socio-Economic Report (draft)</i> , North Coast LRMP, 2002, 74 pages.
Robinson Consulting and Associates Ltd. and Timberline Forest Inventory Consultants Ltd., <i>Kispiox Timber Supply Area – Timber Supply Review III – Socio-Economic Analysis, Version 3.2</i> , prepared for Kispiox TSA DFAM Group c/o Kitwanga Lumber Company Limited, 2006, 21 pages.
Skeena Native Development Society, <i>2006 Labour Market Census</i> , 2006, 65 pages, http://www.snds.bc.ca/
Weldwood, Dwight, <i>Non-Timber Forest Products</i> . HG/QCI Planning Forum Meeting #11, July 2004, 4 pages.