



Gitlaxt'aamiks Village Lands Forest Development Plan 2021 - 2026

Approval
Director of Lands and Resources, NLG

Signature & Date: _____

Prepared for:
Gitlaxt'aamiks Village Government

Prepared by:
Marek Waszkiewicz, RPF

Seal & Date: _____

Table of Contents

Public Review and Comment Version.....	Error! Bookmark not defined.
Executive Summary.....	3
Purpose.....	3
Background.....	3
Forest Development Plan Guiding Principle.....	3
Legislative Framework.....	4
FDP Scope of Work.....	5
Land Availability.....	5
<i>The Gitlaxt'aamiks Main Village Area</i>	6
<i>East Nass Area</i>	7
<i>West Nass Area</i>	7
Post FDP Approval of Operational Plans.....	7
Forest Development Plan in Numbers.....	7
Discussion.....	9
Management of Natural Resources.....	10
Forest Health.....	10
Fire Preparedness Management.....	10
Fisheries.....	11
Riparian Management.....	12
Reforestation.....	13
Windthrow.....	13
Wildlife.....	14
Botanical Forest Products.....	17
Biological Diversity.....	18
Soils and Terrain Stability.....	19
Cultural Heritage Resources and Archeology.....	19
Timber Salvage.....	19
Recreation.....	20
Appendices.....	21
Appendix A - Forest Development Plan Proposed Blocks.....	21
Appendix B - Forest Development Plan Proposed Roads.....	22
Appendix C - 1:50,000 FDP Maps of Applicable Village Lands with Proposed Blocks.....	23

Executive Summary

This Forest Development Plan (FDP) replaces Forest Development Plan 2008-2012. FDP proposes forest management direction and forest practices that are consistent with legislative direction from the *Nisga'a Forest Act*, and other applicable resource plans and policies.

This FDP proposes 10 cutblocks, with an average size of 35.0 ha. The total proposed harvest area is approximately 350 ha at an estimated total volume of approximately 167,000 m³ or an average 33,400 m³ per year. The identified cutblocks at the present time represent the best available locations within Village Lands with respect to merchantability, access and land use constraints.

The plan proposes the construction and modification of 12.5 km of roads, they are mostly spur roads within three operational areas: Gitlaxt'aamiks Village area, East Nass River area and West Nass River area.

Gitlaxt'aamiks Village Government (GVG) will host public open houses to solicit citizens' comments and recommendations.

Purpose

The Gitlaxt'aamiks Forest Development Plan (FDP) provides Nisga'a citizens, the general public, government resource agencies and private interests, information on the location and scheduling of proposed timber harvesting, road construction, road maintenance, road deactivation and other related activities on Gitlaxt'aamiks Village Lands for the period of the next five years.

This Forest Development Plan when approved will be the vehicle for designing and practicing on the ground forest resources management. When implemented, it may provide work and training in the forestry for those individuals who may be interested in the profession. In that sense, FDP contributes to the creation of local employment and educational opportunities.

Background

Timber resources, similarly to other natural resources located within Gitlaxt'aamiks Village Lands, are subject to Nisga'a law. The Executive or the Director of Lands and Resources of Nisga'a Lisims Government (NLG) may authorize harvest or building roads on the village lands only with the approval of Gitlaxt'aamiks Village Government. Prior to obtaining NLG authorization the area must first be identified with the approved Forest Development Plan. To fulfill that requirement Gitlaxt'aamiks Village Government decided to draft this new FDP 2021-2026.

Previous years' FDP drafts were not completed nor submitted for the approval due to the various circumstances but predominantly because of changing focus from development of forest resources to other economic and industrial prospects which were initiated on Nisga'a Lands at that time.

Forest Development Plan Guiding Principle

The five FDP proposed blocks and roads near Gitlaxt'aamiks village represent the best present

possibility for forestry operations, building and re-establishing access and relative distance proximity to work for those village citizens who are interested in forestry and training. Also, the proposed blocks and roads will create a barrier feature in the forest canopy. This could be an important wildfire protection feature for the Gitlaxt'aamiks community where predominant wind direction is from the South and South/East.

The other five blocks in the FDP are located on both the West and East sides of the Nass River by the old Gitlaxt'aamiks Village. All proposed cutblocks are designed for a ground-based system. The operations will be managed with utmost consideration to preserve to all resource values.

Cutblocks were selected based on some parameters including but not limited to:

- stand characteristics: volume, tree species,
- site characteristics: to mitigate impact on environment and land
- access and terrain: location of existing roads, economics
- harvest system: limited to ground-based system
- social: create the opportunity for training, village wildfire protection
- general availability of the land i.e., blocks on West side of Nass river.

The FDP outlines forest practices to conserve and manage forest resources and features such as timber, biodiversity, soil, water, fisheries and riparian areas, wildlife, cultural and heritage uses, recreation and tourism, and botanical forest products.

Legislative Framework

The primary law which governs forest practices is Nisga'a Forest Act. The Forest Development Plan is required to be approved by Nisga'a Lisims Government in order to authorize harvest from the Gitlaxt'aamiks Village Lands.

Nisga'a Forest Act

- Part 4, 20 - term of the FDP: *"A forest development plan must address a period of at least five years unless the Director determines that a shorter period of time is appropriate"*.

Nisga'a Final Agreement

- Chapter 5, and where applicable - Appendix "H"

Gitlaxt'aamiks Official Community Plan, 2012

- document to guide future growth and development of the Village of Gitlaxt'aamiks under its Land Use Plan.

Nisga'a Community Planning and Zoning Enabling Act, 2010

- which establish the provisions for the content of the official community plan including the preservation, protection, restoration and enhancement of the natural environment, and its ecosystems and biological diversity.

Supporting Documents

The Nisga'a Land Use Plan (LUP), 2002

The Land Use Plan for Nisga'a Lands does not apply on the Nisga'a Village Lands. Gitlaxt'aamiks Forest Development Plan utilizes guidance from that document, as per LUP Section 2.2.1 and 2.2.2. The FDP 1:20 000 maps will show land use plan resource values on Gitlaxt'aamiks Village Lands and surrounding area.

Nisga'a Public Land Licence FDP, 2021-2025

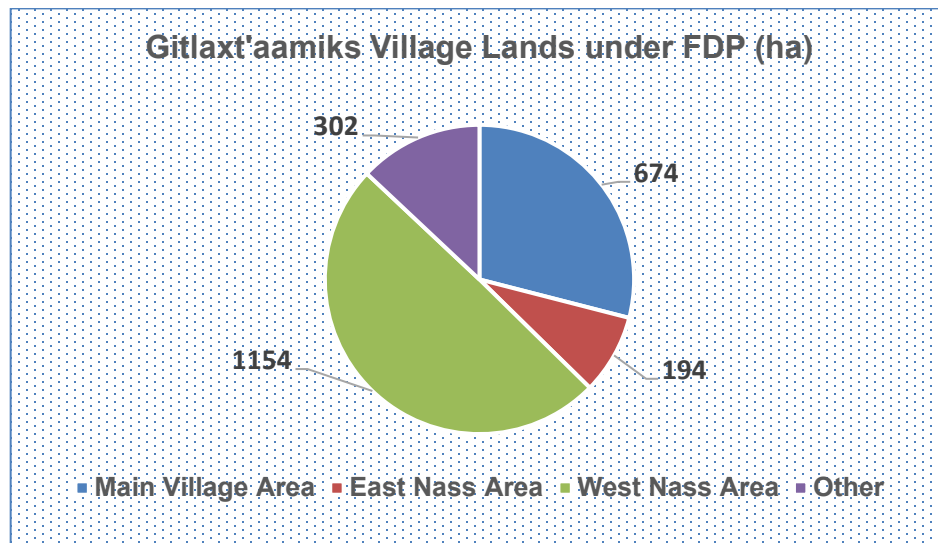
The old Nisga'a Public Land Licence (NPLL) expired April 01, 2020. Before expiration date the Licensee prepared draft FDP 2020 -2025. The modified version of that FDP now is approved for the current NPLL. That covers lands in vicinity of Gitlaxt'aamiks Village Lands. All the relevant information from that plan has been included to the Gitlaxt'aamiks FDP maps.

FDP Scope of Work

- Review source documents: old plans, community plans, mapping, current development, new resource information
- Research: incorporating any updates and new information, consultation with GVG about areas availability for future forest management
- Remote sensing and GIS: review current data, analysis, mapping
- Identify cutblocks and roads: check feasibility and on the ground reconnaissance,
- Drafting the FDP plan document and production of final mapping products
- Consultation and presentation of findings to the GVG
- Coordination of public consultation and FDP submission for approval

Land Availability

Historically previous years forest development plans have been designed within three operating areas: Gitlaxt'aamiks Main Village Area, East Nass Area and West Nass Area.



The Main Village Area (total 674 ha) has been extensively logged in the past due to community growth in size, development of housing, roads, administration buildings, light industrial and designated business areas, power line locations, etc. The East Nass Area (total 194 ha) is located by the Nass River and is adjacent to previously logged private land. The largest area in the FDP is the West Nass Area (total 1154 ha) which is located directly west of the old village. There are also various small land parcels along the Nass River with a combined area of 203 ha. These parcels do not contribute to the proposed FDP mainly due to the access and locations being within riparian areas by the river. There are also two areas (North Parcel and South Parcel) that do not contribute to FDP due to riparian constraints and the fact that one of them has been harvested and is presently covered with young trees. The table below provides details regarding the total of the land base and the location of proposed blocks identified in this FDP.

Gitlaxt'aamiks Village Lands	Total (ha)	FDP (ha)	Block (#)
Main Village Area	674	124	AIY001, AIY002, NVL001, NVL002, NVL003
East Nass Area	194	34	NVL101
West Nass Area	1154	192	NVL102, NVL103, NVL104, NVL105
North Parcel	29		
South Parcel	70		
Other Small Parcels	203		
Total:	2,324	350	

The Gitlaxt'aamiks Main Village Area

Five of ten blocks identified in the FDP have been located in the Gitlaxt'aamiks Main Village Area. The detailed analysis of the forested polygons revealed a few potential locations for forest development blocks. The proposed blocks average 16 ha in size (block AIY001, AIY002, NVL001). Forestry operations in vicinity of the Gitlaxt'aamiks village is an attractive proposition due to economics of operations, short transport of wood and convenient access to the site for local workers. Planning blocks and roads here also may contribute to the overall community wildfire protection.

Through examination of aerial photography and conducting GIS analysis of forest cover, we have classified the Main Village Area into ten land categories (table below). The Main Village Area – 674 ha has a history of harvesting and the designated land classification types reflect that reality. For the purpose of this FDP only “Forest Mature” has been considered at this time. It is possible that upon detailed field review some forested land, especially past selectively logged or mixed stands, may be included into future plans. Some innovative harvesting techniques will be required to re-establish desirable stand characteristics for the future, access resources and create employment at the present time.

A portion of the Gitzyon Community Watershed (GCW) - 198 ha - is located within the Gitlaxt'aamiks main village area. The total GCW area is 2160 ha and extends beyond Nisga'a Lands. The FDP proposed two partial retention blocks with a total operating area of 76 ha. This accounts to approx. 3.5% of the total GCW in terms of the area and forested land volume.

	Classification Types	Total (ha)	FDP (ha)
1	Forested-Matured (blocks AIY001, AIY002, NVL 001 included)	89	48
2	Forested-Immature (past clearcut logged)	50	
3	Forested Mixed (past selectively logged)	44	
4	Forested Mixed (open types, regeneration issues)	22	
5	Forested-Riparian Areas	78	
6	Sanitation Block-SAN1 (recently clearcut logged)	12	
7	Logged Area - Community Development	3	
8	Transmission Line RofW	2	
9	Community Watershed (blocks NVL002, NVL003 included)	198	76
10	Urban Area (non forested)	176	
	Total:	674	124

East Nass Area

The size of Nass East Area is 194 ha. FDP proposes only one block NVL 101, with a total of 34 ha. Configuration of the terrain and proximity to the Nass River determined the shape and size of that block. East of the proposed block the land is predominantly harvested already. Access to the proposed block would be through the already existing roads system, however a couple of short spur roads will be required. No other blocks and roads can be contemplated in the area in the next decades planning horizon.

West Nass Area

The Nass West Area is the largest operating area under this FDP and accounts for 1154 ha. There are four blocks proposed there: NVL102, NVL103, NVL104 and NVL105. The total area of all proposed blocks is 192 ha. This forested land predominantly has not been harvested in the past. Presently there is no road access to the area. The proposed blocks' locations have been part of the forest development planning in the past, and have been incorporated to into this FDP as well. The area is rich for botanical forest products, particularly mushrooms. Opening up this entire section of Nisga'a Lands has been discussed in recent years in conjunction with the possibility of the development of other resources. The area has completed comprehensive resource feasibility studies including the location of Ksga'maal Creek bridge and Total Chance Plan of forest resources. NLG Executive resolution is required to open this area for harvesting.

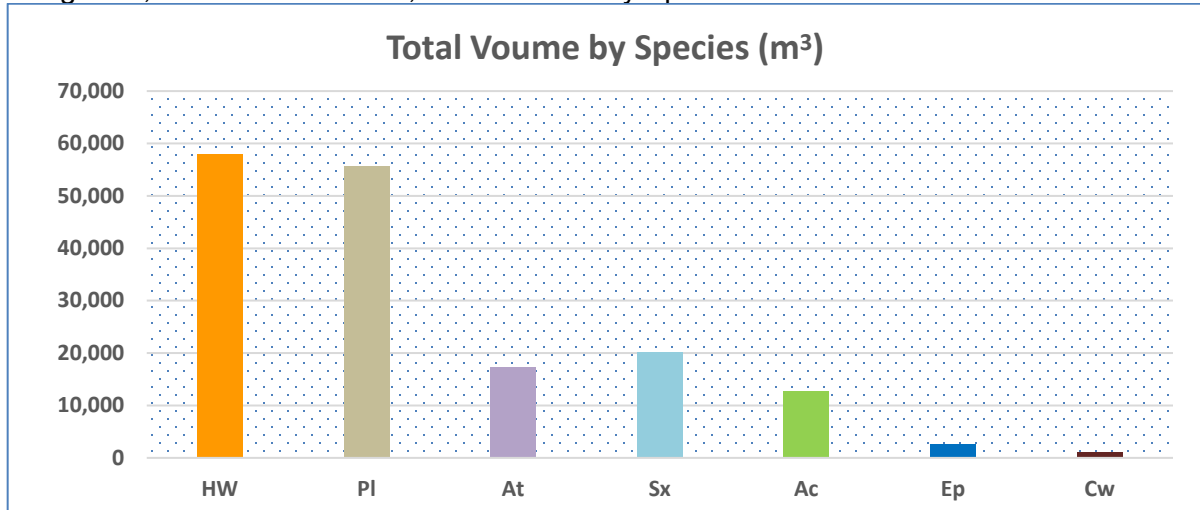
Post FDP Approval of Operational Plans

The FDP gives guidance and direction to operational plans such as Site Plans and Logging Plans that prescribe specific practices to achieve management objectives and forest stewardship. Unless exempted by Director of Lands and Resources NLG, a detailed operational Site Plan will be prepared for each proposed FDP cutblock.

Forest Development Plan in Numbers

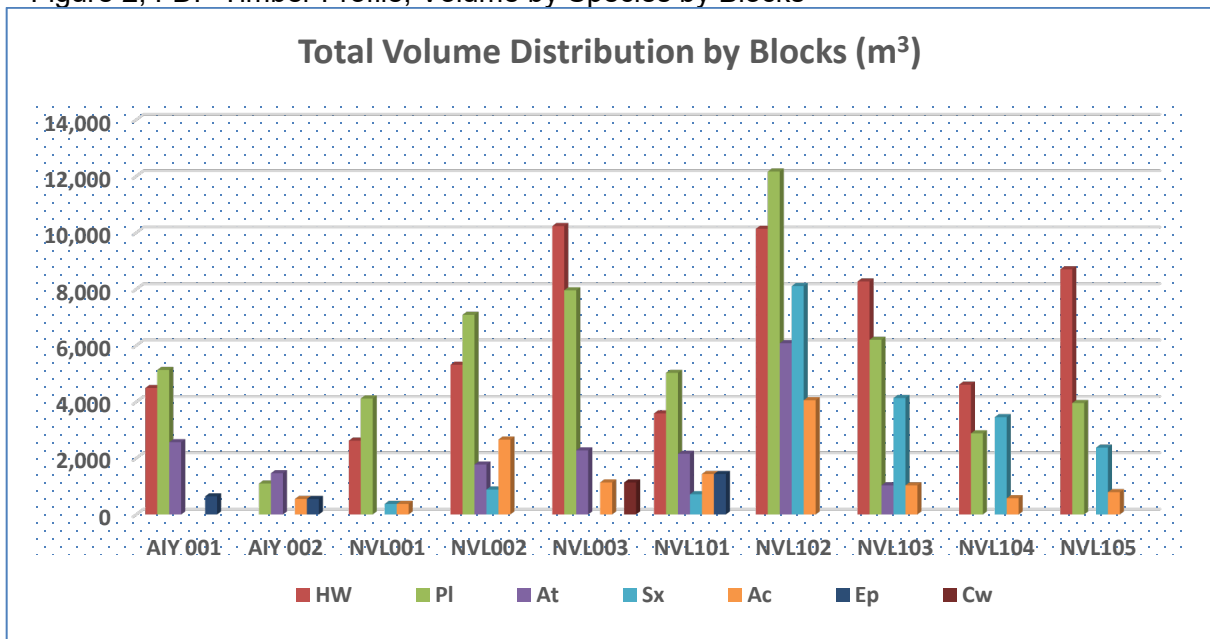
The Figure 1 below shows overall FDP distribution of available volume by species. The majority of volume is shared between Western Hemlock 34.6 % and Lodgepole Pine 33%.

Figure 1, FDP Timber Profile, Total Volume by Species.



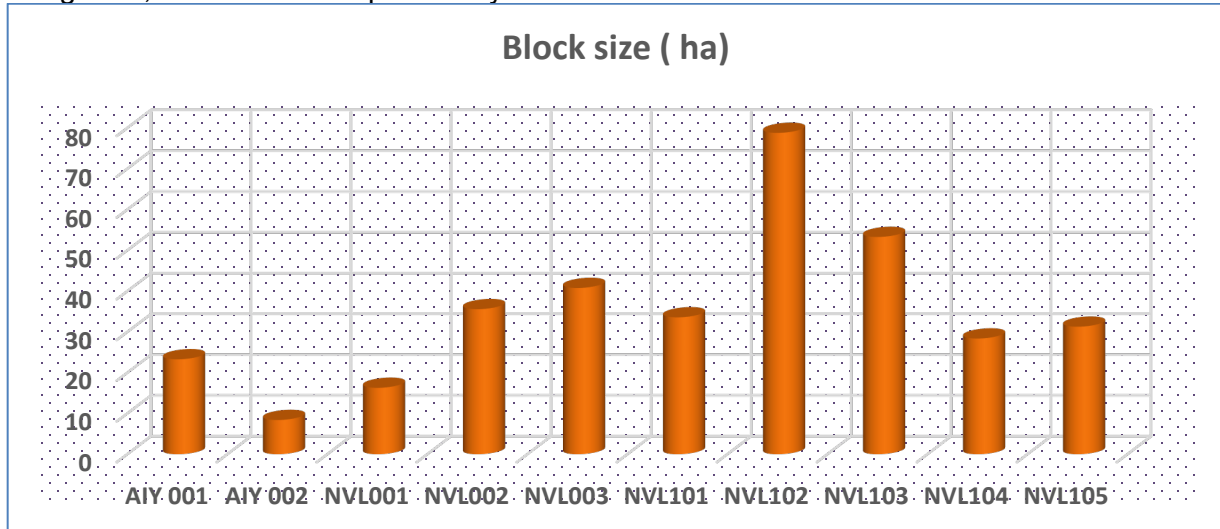
Timber profile analysis shows that two species Western Hemlock and Lodgepole Pine account for approx. 113,600 m3 that is approx.70% of timber resources as proposed in the FDP. The other species account for 20,000 m3 Spruce, 17,300 m3 Aspen, 12,600 m3 Cottonwood, 2,600 m3 Birch and 1.100 m3 of Red Cedar.

Figure 2, FDP Timber Profile, Volume by Species by Blocks



The majority of the available volume is located in the Nass West Area (NVL102, NVL103, NVL105) and the blocks planned within the community watershed (NVL002, NVL003). The total volumes estimate as shown will be reduced due to timber quality, size of the trees, and applied silviculture system for forest management for each block.

Figure 3, FDP Block Comparison by Size



The average overall cutblock size is approx. 35 ha which is consistent with average block size on Nisga'a Lands.

Discussion

FDP demonstrates the couple of key issues which would be important to address for the success of forestry related business.

Issue 1 Available volume and land

Identified shortage of available village lands for short- and long-term sustainable forest development. Due to various limitations only 15 % of all village lands has been considered for this plan.

Issue 2 Harvesting within Community Watershed

This ties to issue 1; lack of opportunities for harvesting in the Gitlaxt'aamiks Main Village Area is the main cause why the FDP places two blocks within the CW. These two blocks are designed to be harvested with the partial retention with maximum water protection and minimum soil and visual disturbance.

Issue 3 Access to Village Lands

Five blocks under this FDP are designed on West Nass Area where there is no present access. If that area will need to be opened up for development, there will not be harvesting there in the next years.

Issue 4 Pursue other forested land within Nisga'a Lands

Preliminary analysis net down calculation indicates that out of 2,324 ha totalling Village lands as much as 1,456 ha has no access. Out of the remaining 868 ha approx. 65% of the land is presently not available for harvesting. Considering the above, at the present time, harvestable land base within GVG Lands is too small for sustainable timber production in terms of expected harvest volumes and timber profile. Finding opportunities for forest management outside Gitlaxt'aamiks Village Lands would change that situation now and for the years to come.

Management of Natural Resources

Forest Health

A healthy forest is a forest that possesses the ability to sustain the unique species composition and processes that exist within it. The health of forests must be preserved to ensure the survival of native plant and animal species that make the forest and to protect those processes that maintain a healthy ecosystem.

The Nisga'a Nation is responsible for forest health on Nisga'a Village Lands. The Nisga'a Final Agreement outlines Nisga'a Nation and Crown responsibilities for forest health.

Based on historical local data the forest health factors that have an impact on the potential yield of timber resources are;

- Spruce beetle (*Dendroctonus rufipennis*)
- Mountain pine beetle (*Dendroctonus ponderosae*)
- White pine weevil (*Pissodes strobi*)
- Hemlock dwarf mistletoe (*Arceuthobium tsugense*)
- Dothistroma Needle Blight (*Mycosphaerella pini*)
- Small mammals
 - American porcupine (*Erethizon dorsatum*)
 - Snowshoe hare (*Lepus americanus*)
 - Meadow vole (*Microtus pennsylvanicus*)
- Root Diseases
 - Annosus root disease (*Heterobasidion annosum*)
 - Armillaria root disease (*Armillaria ostoyae*), and
 - Tomentosus root rot (*Inonotus tomentosus*).

Forest health is managed by Nisga'a Lisims Government and will be notify if concern has been identified. Upon identification of concern for present or possibly future time an appropriate management method will be designed. Normally forest health factors are identified during the field work stage and specific management options will be written into the Site Plan for implementations.

In recent years spruce bark beetle infestation has been of concern. Nisga'a Lisims Government directed the deployment of an aggressive management plan including trap trees, deployment pheromone traps, and sanitation timber harvesting of affected stands. If a forest health issue dictates timber harvesting is required within a community watershed, then protection of water quality and quantity will be the primary objective. GVG will be working with NLG to develop a management plan. At the present time most pest, pathogens are at endemic levels with the local rise and decline over the years and unlikely to have significant social and economic impact.

Fire Preparedness Management

The government of British Columbia is responsible for the control and suppression of forest fires on Nisga'a Public Lands, and the Nisga'a Lisims Government is responsible for the control and suppression of forest fires on Nisga'a Village Lands and Nisga'a Private Lands. Roads and cutblocks implemented as proposed in the FDP will provide for fuel breaks and wildfire prevention.

Immediate action will be taken to extinguish fires that may ignite due to harvesting operations. Gitlaxt'aamiks village forest management as per FDP must comply with the forest fire and prevention provisions in the *Nisga'a Forest Act*. All fires must be immediately reported to the Director of Lands and Resources.

Harvesting activities will ensure that excess slash accumulations can be disposed of in a safe, orderly manner eliminating both fire and insect hazards. Upon completion of timber harvesting activities blocks and roadways will be assessed for hazard abatement and if necessary, fuel reduction activities will be scheduled.

Water Resources

Logging and road construction activities may impact domestic water supply intakes, water supply infrastructures, stream riparian vegetation, water quality and fish habitat. The Nisga'a Nation does not own submerged lands, including stream, rivers, lakes and tidal areas. The BC Ministry of Environment and the Government of Canada Department of Fisheries have jurisdiction over water bodies, including non-fish and fish-bearing streams.

Water resource management objectives include the maintenance of water quality and quantity for domestic, recreational, agricultural and industrial use, and for wildlife and fisheries needs. The hydrological integrity of watersheds is to be protected and riparian areas are to be maintained.

The Gitsyan Creek (Ksi Gitsyan) watershed is an important land feature for Gitlaxt'aamiks Village, and as such was designated Community Watershed. The Gitsyan Creek watershed provides a water source for the village. The total Gitsyan Creek watershed is approx. 2160 ha out of which only 198 ha is located on the village lands.

The forest management activities within the watershed can be carried on only with the permission from the Lands and Resources Director NLG. The main condition to obtain that permit is to demonstrate that activities present no threat to the quality or quantity of potable water supply. FDP is proposing to harvest two blocks of the Gitlaxt'aamiks community watershed. Proposed cutblock NVL002, NVL003 combined area is 74.6 ha and the Site Plans prescription will be partial retention harvesting. All necessary assessments including terrain stability and hydrological assessments will be carried out.

The management strategies that may be prescribed to protect water quality besides designation work for specific riparian management areas may include designing machine free zones; fell and yard away areas around watercourses; terrain stability assessments; avoiding unstable sites; hydrological assessments; minimal disturbance road construction; capping roads, ditch drainage, sediment controls etc. Site Plans will specify technique and timing of all the activities. Gitlaxt'aamiks Village Government understands that harvesting within the community watershed is a sensitive proposition, however partial retention harvesting has been successfully done before for many watersheds around BC and on Nisga'a Lands as well. The water quality and quantity is of critical importance to us, therefore Watershed Assessment as a whole should be completed.

Fisheries

The Nass River and its tributaries is one of the most productive fish bearing river systems in British Columbia.

The cultural, economic and social importance of salmon to the Nisga'a Nation require to ensure any disruption of fish or fish habitat is minimized. An objective for the fisheries resource is to maintain and/or restore the integrity of all aquatic systems supporting fish, as well as maintaining and/or restoring the biodiversity and function of riparian systems.

The BC Minister of Environment and Climate Change (MoECC) is responsible for the management of fisheries and fish habitat.

Proper identification and classification of all riparian areas will enable protection of fish populations and habitats. The FDP maps identify all mapped streams, lakes and wetlands. Unless the stream has been inventoried for fisheries values, the FDP planning process will use a default system of stream gradient and estimated stream width to conservatively classify streams. Non-inventoried streams with less than a 20% gradient and without discernible obstructions are, by default, classified as fish bearing streams. Non-inventoried streams which exceed the 20% gradient criteria are classified as non-fish bearing streams. Non-fish bearing stream reaches that are deemed to be especially important may be managed as fish bearing.

Fisheries values are field assessed at the stand level during the preparation of Site Plans. Stream gradients, widths, and fish habitat suitability are confirmed on the ground at this time. When timber harvesting, road construction or bridge building are scheduled next to a known fish habitat, the guidance from the *Standards and Best Practices for Instream Works (2004)* will be used in making operational prescriptions.

When in-stream work is required outside the established timing windows, GVG will request a variance from the MoECC and consult with the Department of Fisheries and Oceans (DFO) to ensure the appropriate protective measures are taken to minimize the impact on fish habitat.

Riparian Management

The Nisga'a Nation has set protecting anadromous fisheries values including riparian areas and marine/coastal habitat as a top priority. The objective is to maintain and/or restore the function of riparian systems. Riparian management areas are stream banks, wetlands, and the natural boundaries of a lake.

The *Nisga'a Forest Act Part 5 Division 2* details riparian management requirements along streams and rivers, and around wetlands and lakes. Riparian management areas provide for the protection and management of fisheries, riparian wildlife habitats, and water quality. Streamside tree retention is to be encouraged, particularly mature hardwoods to maintain streambank stability and stream temperature control, and to provide a source of wildlife trees and future large woody debris.

Timber harvesting within a riparian management area will adhere to the criteria established within the *Nisga'a Forest Act Section 28 General Requirements within Riparian Management Areas*. The degree of retention within any specific Riparian Management Area will be dependent on the riparian classification, the values present and an assessment of windthrow hazard and risk. Director of Lands and Resources NLG may specify in writing specific practices within riparian management areas.

Site specific prescriptions will be developed to meet fish and riparian area stand level objectives.

The forest practices in a riparian management area will be designed to minimize impacts on stream channel dynamics, aquatic ecosystems, water quality, and the diversity, productivity and sustainability of wildlife habitat and vegetation within the riparian management area, and will not increase the risk of windthrow on trees retained adjacent to the stream wetland or lake.

Reforestation

NLG is responsible for the reforestation of areas harvested under this FDP.

Harvested areas must be reforested and contain at least the minimum number of crop trees per hectare as determined to be ecologically appropriate for the area. Methods and strategies for adequately reforesting harvested areas are described within the site plan for individual blocks. Reforestation methods could include leaving the area to be naturally regenerated, planting all or part of a block, or fill planting areas that do not have a sufficient number of acceptable crop trees.

Because of the importance of western red cedar and yellow cedar, where ecologically suitable these species will be planted at minimum densities, unless greater densities are recommended. When practical, the retention of healthy advanced regeneration will be considered and plans will specify retention levels. All efforts will be made to promote diversity during planting and natural regeneration.

Windthrow

Windthrow can be categorized as normal or catastrophic. Normal windthrow occurs on a smaller scale in areas that have an inherently higher hazard such as block edges, ridges, or in areas of frequent high winds. Catastrophic windthrow is an event that occurs infrequently when exceptionally strong winds cause extensive damage to large areas.

Windthrow can have a significant impact on fisheries habitat if riparian management areas are impacted by blowdown or where windthrow creates conditions that may cause sediments to be introduced into a stream. Windthrow on sensitive soils may also lead to slope failures or slides. Areas of windthrow will be assessed to determine if the salvage of damaged timber is feasible.

To minimize the risk of windthrow when planning timber harvesting, GVG will utilize information such as blowdown history, prevailing winds, topography, stand structure, and soil conditions. Areas that are determined to be moderate to high risk of windthrow will be identified during block planning and managed through appropriate block design. Possible practices to reduce the amount of windthrow include minimizing the amount of exposed timber edge to prevailing winds, maintaining wide buffers or leaving strips along susceptible stands, clear-cutting high hazard stands or topographic features, and mechanical pruning or topping to establish a wind-firm edge. In areas with very high non-timber values, edge stabilization treatments such as feathering or limbing and topping will be considered.

In a catastrophic windthrow event, an assessment of the affected area will be conducted to determine the extent of the damage, the forest health risk, and the feasibility of implementing a timber salvage plan for the area. If it is determined the salvage must occur, GVG will prepare a Timber Salvage Plan and apply to amend the FDP accordingly.

The time between the event and salvage of the timber is critical to ensure minimizing forest health risk and capturing timber value.

Wildlife

The MoECC is responsible for wildlife on Nisga'a Lands. On the effective date, the Minister has designated moose, grizzly bear, and mountain goat as the initial designated species. The habitat of the designated species needs to be identified and managed to ensure wildlife populations are not negatively impacted.

Forest Development Plan objectives are centered on habitat maintenance strategies to sustain viable populations of all native wildlife species within their natural ranges. GVG will work and consult with NLG and MoECC when developing harvest plans. Where necessary, timber harvesting plans in the Wildlife Habitat Zone will be supported by a Wildlife Habitat Assessment and must not degrade the wildlife habitat for the designated species. Moose, Grizzly Bear and Mountain Goat have been identified as designated species.

Moose

Moose is a designated species. Important Moose habitat is known to occur throughout Nisga'a Lands. Moose are well adapted to the early successional stages of forests, foraging extensively on deciduous trees and shrubs that colonize sites following disturbance. However, Moose are also dependent on the cover provided by mature coniferous forests to provide security cover, thermal cover and access to forage during the winter so quality Moose habitat includes a variety of different interspersed seral stages.

Forest management strategies will focus on the maintenance of security and thermal cover for Moose. Forest practices in the Nass Bottomlands and specifically where Moose winter range can be identified will prescribe Wildlife Tree Patches or reserves to ensure sufficient security and thermal cover for Moose. Additional practices may include limiting the log haul to the period May to November and prescribing that roads and structures within 500m of Moose winter range will be constructed in a manner that will facilitate effective deactivation (no vehicle access) following completion of activities.

Forage production for Moose will be encouraged through silvicultural treatments such as manual brushing and managing for a component of deciduous tree species in regenerated stands.

Mountain Goat

Mountain Goat is a designated species. The snow shedding properties of steep bedrock slopes with sharp ledges and overhangs, and particularly the southern exposures, are favored habitat areas for Mountain Goats to evade predators. Vertical ravines and canyons may serve as traditional seasonal movement areas as well.

As summer progresses, Mountain Goats will move upslope to alpine meadow habitats to feed on shrubs, grasses, sedges, and forbs. Mountain Goat populations tend to compress as winter approaches, retreating to lower elevations below timber line to escape heavy snows and cold temperatures.

Winter foraging will occur in very close proximity to steep escape terrain, including areas of old growth forests where browse such as coniferous trees, lichens, forbs, and mosses may be available.

Spring birthing and nursing occurs in May or June and is typically associated with extreme terrain. Over wintering and early spring birthing habitats are the most critical to Mountain Goat populations and may be a concern for forest management.

In areas that are identified as critical Mountain Goat habitat, forest management strategies will be directed by the measures prescribed in the *Kalum Ungulate Winter Range Order #U-6-001 (2012)*. There will be no logging within Mountain Goat winter range (except individual trees for safety reasons). Logging within 500m (2000m for helicopter logging) of Mountain Goat winter range will take place between June 15th and October 31st. Roads and structures within 500m of Mountain Goat winter range will be constructed in a manner that will facilitate effective deactivation (no vehicle access) following completion of activities.

Grizzly Bear

The Grizzly Bear is a designated species and is a species of Special Concern under SARA. Grizzly Bears depend on diverse habitats and do not tolerate human encounters well.

Suitable Grizzly Bear habitat may be found across all of Nisga'a Lands. Valley-bottom salmon streams and riparian area forests provide important forage species such as devils club, red elderberry, currants, and skunk cabbage. Avalanche tracks, subalpine, and alpine meadows are likewise important upland habitats. Forest management strategies for Grizzly Bears will prescribe connectivity of habitats, the maintenance and growth of forage species over time, and access management.

Fisher, Marten and Other Furbearers

For Fisher, Marten and other furbearers, the predominant impacts of clearcut logging are the reduction of forest interior conditions leading to reduced connectivity of suitable habitat. The maintenance of connective corridors, specifically along riparian areas, within wetland forest types and to upland habitats is extremely important for maintaining habitat opportunities. The *Nisga'a Forest Act* provides for the maintenance of riparian management areas along streams, lakes and wetlands. Critical habitats for fisher are generally riparian associated, with suitable resting and maternal denning sites possibly being limiting factors. Large coarse woody debris is important for both winter rest sites and as habitat for prey species. Maternal den sites are predominantly located in large, declining cottonwood. Fisher, marten and other furbearers may avoid large openings (25 ha +) because of the lack of cover and susceptibility to being preyed upon, therefore the maintenance of corridors or screening patches will reduce sighting distances and link unharvested forest stands. Wildlife tree retention patches typically include large veterans and deciduous species that provide important opportunities for denning and cover habitat and they provide sources of coarse woody debris for resting and foraging sites. Site Plans will detail the specific strategies and measures that will employ to protect furbearing species.

Coastal Tailed Frog

The Tailed Frog is the only known stream breeding frog in Canada. For coastal British Columbia, the tailed frog distribution coincides with the Coastal Western Hemlock Biogeoclimatic Zone.

The known northern limits of distribution are found in the Kalum Forest District just outside of Nisga'a Lands.

Research from the Center of Applied Conservation Biology at U.B.C. indicates that the coastal tailed frog primarily inhabits headwater gullies of cool and permanent mountain streams. Creek size and fine sediment levels appear highly influential to tailed frog populations. The creek substrates and gully sidewalls must be relatively stable as events such as debris flows and sediment laden floods impart a high mortality on larval (tadpole) populations. A stable creek has a low percentage of fine sediments with boulders and cobbles comprising the channel bed. This substrate provides tadpoles forage sites and cover from predators and bedload transport events. Adults will feed on terrestrial invertebrates at night, retreating under cover in or next to streams during the day. Bedrock types also likely play a significant role in tailed frog distribution with populations most prevalent in competent, coarse-grained intrusive rocks and scarce or absent in friable, fined-grained sedimentary rocks. Tadpole numbers also appear correlated to creek size, occurring in creeks ranging from 1 to 12 meters in width. Wider creeks have a greater carrying capacity and may more effectively flush out any sediment inputs. The tailed frog has a potential to occur on Nisga'a Lands, specifically where coarse-grained bedrock geology is present. Management objectives for suitable habitats will revolve around the maintenance of natural stream channel sediment levels and transport regimes and the conservation of forested buffers along the stream. Strategies such as riparian reserves, fell and yard away techniques and machine free zones in riparian management areas, and ditch sediment traps on roadways will be employed.

The Tailed Frog is the only known stream breeding frog in Canada. For coastal British Columbia, the tailed frog distribution coincides with the Coastal Western Hemlock Biogeoclimatic Zone. The known northern limits of distribution are found in the Kalum Forest District just outside of Nisga'a Lands. Research from the Center of Applied Conservation Biology at U.B.C. indicates that the coastal tailed frog primarily inhabits headwater gullies of cool and permanent mountain streams. Creek size and fine sediment levels appear highly influential to tailed frog populations. The creek substrates and gully sidewalls must be relatively stable as events such as debris flows and sediment laden floods impart a high mortality on larval (tadpole) populations. A stable creek has a low percentage of fine sediments with boulders and cobbles comprising the channel bed. This substrate provides tadpoles forage sites and cover from predators and bedload transport events. Adults will feed on terrestrial invertebrates at night, retreating under cover in or next to streams during the day. Bedrock types also likely play a significant role in tailed frog distribution with populations most prevalent in competent, coarse-grained intrusive rocks and scarce or absent in friable, fined-grained sedimentary rocks. Tadpole numbers also appear correlated to creek size, occurring in creeks ranging from 1 to 12 meters in width. Wider creeks have a greater carrying capacity and may more effectively flush out any sediment inputs. The tailed frog has a potential to occur on Nisga'a Lands, specifically where coarse-grained bedrock geology is present. Management objectives for suitable habitats will revolve around the maintenance of natural stream channel sediment levels and transport regimes and the conservation of forested buffers along the stream. Strategies such as riparian reserves, fell and yard away techniques and machine free zones in riparian management areas, and ditch sediment traps on roadways will be employed.

Great Blue Heron, Marbled Murrelets, Keen's Long-eared Myotis and Northern Goshawk

Great Blue Herons are likely present in low numbers on the coastal and estuary portions of Nisga'a Lands. Great Blue Herons require abundant and accessible prey within 10km of a breeding location. If any heron colonies are identified, the Ministry of Environment will be notified and a strategy developed which may include a site-specific system of reserves. Marbled Murrelets are likely present in low numbers on the coastal portions of Nisga'a Lands.

If any Marbled Murrelets are identified, the Ministry of Environment will be notified and a site-specific strategy developed which may include a system of reserves and/or alternative silviculture systems in the immediate vicinity. Keens Long-eared Myotis is a bat species with a limited and sparse distribution; it is not known to occur on Nisga'a Lands. If it is identified, the Ministry of Environment will be notified and a site-specific strategy developed which may include a system of reserves and/or alternative silviculture systems in the immediate vicinity and around associated habitat features. The Northern goshawk is widely distributed throughout the Skeena Region and is likely present within Nisga'a Lands. If any Northern goshawk nests are identified within proposed developments, the Ministry of Environment will be notified and a site-specific strategy developed which may include a range of options from timing restrictions to system of reserves and/or alternative silviculture systems (e.g., shelterwood) in the immediate vicinity of the identified nests.

Wolverine

Wolverines are widely distributed at low densities throughout British Columbia. Wolverines utilize a variety of food items and habitat types throughout the year and may require a variety of habitat types over their home range. Wolverines have a very large home range. Because wolverines are not habitat specialists and have extensive home ranges, management will be focused on general wildlife measures such as Wildlife Tree Patches, dispersal corridors and riparian management. If specific features such as den sites are located, they may be considered for inclusion in Wildlife Tree Patches.

Botanical Forest Products

Botanical forest products within the Nisga'a Lands include the wild edible mushrooms, edible berries, fiddleheads, floral products, and medicinal plants. The identification and protection of habitat associated with botanical forest products is a priority of the Nisga'a Nation. The Nisga'a Forest Act defines botanical forest products as; Pine mushrooms, and any plant or fungus that occurs naturally on Nisga'a Lands, and is a prescribed botanical forest product. Currently prescribed botanical forest products are listed by the Land Use Plan and include wild edible mushrooms and fiddleheads. Other potential botanical forest products include edible berries, floral products, bark, and medicinal plants.

The Land Use Plan established the Botanical Forest Products zone. Within this zone forest management decisions will consider the cumulative effects on the appropriate habitat for botanical forest products across all of Nisga'a Lands, and an assessment of botanical forest products habitat. Access to botanical forest product harvesting areas will not be unduly restricted by forest management practices.

A portion of the Botanical Forest Products zone consists of the Pine Mushroom polygon. The Pine Mushroom polygon was established for the protection of the commercially viable Pine Mushroom (*Tricholoma magnivelare*) grounds. Within the Pine Mushroom polygon and on pine mushroom habitat: i) timber harvesting, including that associated with roads, will retain a minimum of 80% of the forest cover at an age of at least 120 years, and (ii) silviculture systems, other than for areas to be occupied by roads, will be a selection system and provide for retention of up-to 70% of the total basal area of the cutblock.

The protection or management of habitat suitable for other botanical forest products or areas that are suitable Pine Mushroom ground outside the polygon will be dealt with on a site-specific basis.

Biological Diversity

The long-term objective of the Nisga'a Nation is to maintain and/or restore biodiversity across Nisga'a Lands. Biodiversity will be managed at the landscape and stand levels. Prior to harvesting areas identified as being Ecologically Sensitive by the Land Use Plan, the area will have an assessment of the ecological values to ensure those ecological values are being adequately conserved. On Nisga'a Lands, biodiversity (biological diversity) is regarded as the diversity of plants, animals and other living organisms in all their forms and levels of organization, and includes the diversity of genes, species and ecosystems, as well as the evolutionary and functional processes linking them. Biodiversity conservation strategies in managed forests are based on evolving ecosystem management concepts that assume the needs of most organisms will be met by maintaining a range of habitats across a broad geographic distribution. Because all species cannot practically be managed on all areas individually, biodiversity must be managed at a variety of scales and across a variety of landscapes. Strategies for individual species may be specifically designed as required.

Nisga'a Lisims Government will address the landscape level biodiversity within the review and approval of this FDP and may establish requirements for retention of old growth or rare ecosystem types.

Cutblock design including size, shape, and pattern, can be used to create a range of disturbance types and sizes, and can be enhanced by including even and uneven aged forest stand management. Small scale disturbances will be mimicked through dispersed patch cutting or uneven aged management and clearcutting with Wildlife Tree Patch retention.

The biodiversity requirements within a cutblock must maintain stand structure by retaining at least 10% of the cutblock area in effective wildlife tree patches (WTP's). Operations must conserve patches of advanced regeneration, non-merchantable defect trees as recruitment snags, and minor tree species that form less than 20% to the trees present on the cutblock.

Coarse woody debris is important for the future nutrient status of the harvested area. Coarse woody debris levels will be managed by limbing and topping harvested trees on the cutblock, leaving any residue and waste distributed across the cutblock, and leaving non-merchantable material on the cutblock. The amounts of coarse woody debris must ensure future fire risk and reforestation requirements have been considered. In areas of dispersed harvesting, the size range of leave areas will approximate that of harvested openings. Cutblock location across the landscape and across time will attempt to reflect natural disturbance patterns subject to the limitations caused by previous timber harvesting. Landforms, features and site sensitivity to development will also be considered in cutblock design.

Until an analysis of patch size distribution is completed, openings that are greater than 60 ha of non-greened up area require the authorization of the Director; see *Nisga'a Forest Act, Section 6, Variances*.

Connectivity at the landscape level is to be managed through riparian and upland corridors, i.e., extended rotations and use of non-clearcut silvicultural systems and corridor replacement via aggregation of harvest units. These management practices are meant to ensure that landscape level stand structure will reflect natural disturbance patterns across Nisga'a Lands.

Soils and Terrain Stability

The *Nisga'a Forest Act* outlines requirements for management of the soil resource. GVG will comply with those requirements and prescribe forest practices that minimize soil resource impacts.

Longer-term timber harvest planning is used to develop road access management plans which seek to minimize road construction and in turn soil disturbance. Stand level soil disturbance objectives are set in Site Plans and soil disturbance rehabilitation measures will be prescribed where necessary. Harvesting systems and seasonal restrictions will be prescribed to limit soil disturbance to acceptable levels.

Where evidence of road or block instability is suspected or proposed roads and cutblocks contains slopes 60% or greater, a Terrain Stability Field Assessment (TSFA) will be completed. Terrain Stability Assessment will be completed for proposed cutblocks and roads where side slopes are greater than 60% or where there is noted terrain instability in the field or based on aerial photography and terrain mapping.

Cultural Heritage Resources and Archeology

A Cultural Heritage Resource is an object, site, or location of a traditional social practice of historical, cultural or archaeological significance to the Nisga'a Nation or the province.

Cultural Heritage Resources are identified through historical maps, archaeological impact assessments and public comment, and will be addressed in accordance with the Heritage Conservation Act. Archaeological Impact Assessments are required to manage and conserve archaeological resources, including areas proposed to be harvested under the FDP.

The Land Use Plan established a Heritage Preservation Zone to protect heritage sites and features identified in the Land Use Plan. The primary objective of the Cultural Forest Products zone is the production of forest resources important to the Nisga'a people, and the zone must be managed in such a way as to ensure that the cultural forest resources continue to be available. Cultural Forest Resources include botanical forest products, medicinal products such as devils club, food resources such as berries, and specific tree species such as Cedar.

Forest practices must address the cultural forest resources that have been identified as important to the Nisga'a Nation. Timber harvesting prescriptions must consider the cumulative effects on identified cultural forest products across all of Nisga'a Lands.

AIA's will be completed on proposed cutblocks that show or have a high likelihood of containing archaeological resources, unless exempted by Director of Lands and Resources NLG.

Timber Salvage

Areas to be harvested by timber salvage permits are not required to be identified by this FDP, however whenever possible they will be incorporated into the FDP to improve the planning process.

A timber salvage permit must be limited to a volume of timber not greater than 2,000 m³ and must be for a term not exceeding two years. All efforts will be taken to prevent the spread of insect or disease infestations and salvage dead or dying timber.

Timber damage resulting in timber salvage may be caused by the activities proposed in this plan or an event of nature. The prescribed forest practices will be drafted to minimize timber damage and the subsequent need for timber salvage.

Visual Impact

Visual objectives have been established by NLG since 2004. Proposed developments expected to be visible from communities or recreational areas will have a visual quality objective of Partial Retention and developments visible from the Nisga'a Highway will have a visual quality objective of Modification. Visual quality issues will be addressed on a per block basis through a visual assessment from critical viewpoints. Proposed roads and cutblocks will be required to complete a digital terrain modeling to identify and quantify visual impacts. Blocks within the Community Watershed (NVL002, NVL003) although account for total of 74 ha are planned to be partial retention harvesting therefore the size as proposed will have minimal impact on visual qualities. The signs of logging will be not visible within a few years.

Recreation

GVG supports potential outdoor recreation and tourism-based economic development and will work to ensure that wherever possible, recreational values are accommodated in the plan within Gitlaxt'aamiks Village Lands.

Time Schedule for Referral and Public Consultation

The term is 30 days from the date of first publication (**Referral Date**), unless extended by the Director of Lands and Resources, NLG. Due to pandemic restrictions, public meeting will be restricted. FDP draft documents will be placed on the Gitlaxt'aamiks Village Government website for public access. Hard copy documents and maps will be available for viewing at the Gitlaxt'aamiks Village Government office. Public comments from review will be recorded.

Location	Address	Referral Date	Consultation Date
Nisga'a Lisims Government	Gitlaxt'aamiks, 2000 Lisims Dr	June 29, 2021	
Gitlaxt'aamiks	Gitlaxt'aamiks Village Government	June 29, 2021	
Gingolx	Gingolx Village Government	June 29, 2021	
Laxgalts'ap	Laxgalts'ap Village Government	June 29, 2021	
Gitwinksihlkw	Gitwinksihlkw Village Government	June 29, 2021	
Terrace	Terrace Nisga'a Urban Local Office	June 29, 2021	
Prince Rupert	Gitmaxmak'ay Nisga'a, 301- 860 3rd Avenue	June 29, 2021	
Vancouver	Nisga'a Ts'amiks, 2475 Franklin St.	June 29, 2021	

Appendices

Appendix A - Forest Development Plan Proposed Blocks

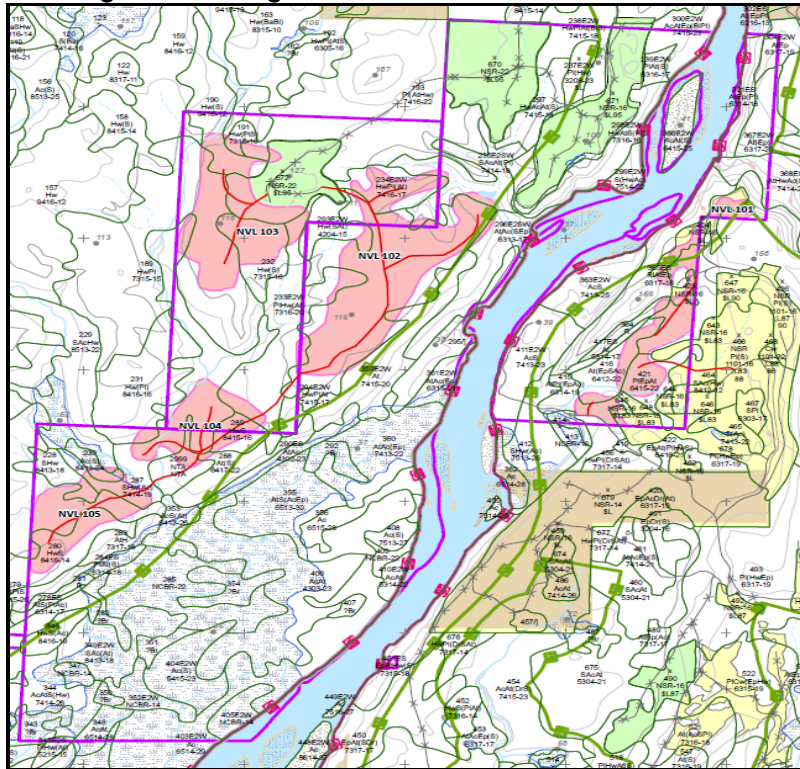
Block #	Location	Total Area (ha)	Total Volume (m3)	Harvest Method	Silviculture System	Ecosystem	Assessments				
							T	R	V	A	W
AIY001	General Village Area	23.3	12,830	GBS	CCwRes	ICHmc2	x	x	x		
AIY002	General Village Area	8.4	3660	GBS	CCwRes	ICHmc2	x	x	x		
NVL001	General Village Area	16.3	7488	GBS	CCwRes	ICHmc2	x	x	x		
NVL002	Community Watershed	35.6	17722	GBS	Partial Cut	ICHmc2	x	x	x		
NVL003	Community Watershed	40.8	22736	GBS	Partial Cut	ICHmc2	x	x	x		
NVL101	East side of the Nass Rv.	33.6	14362	GBS	CCwRes	ICHmc2	x	x			
NVL102	West side of the Nass Rv.	78.8	40547	GBS	CCwRes	ICHmc1		x			
NVL103	West side of the Nass Rv.	53.3	20677	GBS	CCwRes	ICHmc1		x			
NVL104	West side of the Nass Rv.	28.4	11519	GBS	CCwRes	ICHmc1		x			
NVL105	West side of the Nass Rv.	31.3	15822	GBS	CCwRes	ICHmc2		x			
		349.8	167,363								
Information Blocks											
					GBS - Ground Based System		T - Terrain				
					CCwRes - Clear-cut with Reserves		R - Riparian				
							V - Visual				
							A - Archaeological				
							W - Wildlife				

Appendix B - Forest Development Plan Proposed Roads

Block #	Location	Road type	Work required	Length (km)	Bridges (#/m)	Culverts (#/m)	Deactivation Timing				Assessments					
							Year	T	S	P	R	V	A	W	T	
A1Y 001	General Village Area	spur	M/C	0.6	0	0	H/FP	H			FP	X	X			X
A1Y 002	General Village Area	spur	C	0.1	0	0	H/FP	H			FP	X	X			X
NVL001	General Village Area	spur	M/C	1.1	0	0	H/FP	H			FP	X	X			X
NVL002	Community Watershed	spur	C	1	0	1/1.5	H/FP	H			FP	X	X			X
NVL003	Community Watershed	spur	C	1.3	0	0	H/FP	H			FP	X	X			X
NVL101	East side of the Nass Rv.	spur	C	1.8	0	1/1.5	H/FP	H			FP	X				
NVL102	West side of the Nass Rv.	spur	C	2.5	0	1/1.5	H/FP	H			FP	X				
NVL103	West side of the Nass Rv.	spur	C	1	0	0	H/FP	H			FP	X				
NVL104	West side of the Nass Rv.	spur	C	1.9	0	0	H/FP	H			FP	X				
NVL105	West side of the Nass Rv.	spur	C	1.2	1, 10m		H/FP	H			FP	X				
				12.5												
	Information Roads		M - Modification				H - Harvest Year				T - Terrain					
			C - Construction				FP - Following Planting				R - Riparian					
			M/C - Combination of both				T - Temporary				V - Visual					
							S - Semi - Permanent				A - Archaeological					
							P - Permanent				W - Wildlife					

Appendix C - 1:50,000 FDP Maps of Applicable Village Land with Proposed Blocks

Designated Village Land



Granted Village Land

