Engineering Report
CP008

Cutblock: F4

Prepared By: George Knoll, RPF

Date: June 17, 2015

Digitally signed by George Knoll
Date: 2015.06.17 15:24:47 -07'00'

K2 Forestry Services Ltd.

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Contents

Introduction

K2 Forestry Services Ltd. was contracted to provide multiphase development for the Sproat FDU Area of the Alberni Valley Community Forest (AVCF) tenure. A reconnaissance was conducted in August 2014 to summarize all resource features and determine development opportunities for the area. The following Engineering Report summarizes the engineering specifics related to developing Cutting Permit 008 for cutblock F4. The report includes: a general description of the area, safety highlights, block description, engineering rationale and cruising summary. Related documents including the Harvest Instructions Map can be viewed in the Appendices. Table 1 and 2 below illustrate the general specifics of the area.

Table 1. CP 008 Overview

Attributes	Description
Tenure	K2D, Alberni Valley Community Forest Corporation
General Location and Access	Clutesi Creek
Mapsheet	92F025
Forest Region/ District	Coast/South Island
Timber Supply Area/ Block	Strathcona / B Kyuquot

Table 2. Block F4 Breakdown

Block	Timbermark	Gross Ha	Harvest Area (Ha)	Clearcut	Partial Cut	WTRA	TLA	Road RoW (K2D/0R1)
F4	K2D/008	25.47	20.34	20.34	0	3.30	0.32	1.51

Safety Highlights

Falling

CP-008 (block F4) can be mechanically felled, but hand-falling may be required for areas identified as steep hoe-chuck on the Harvest Instructions Map. These areas exceed the safe working slope guidelines for ground-based mechanical harvesters and contain shallow soils over bedrock (unsafe for tracked machines)

Very minor sign of scattered Root Rot pockets are located within these blocks. Timber in these areas

exhibit a thinning canopy with a snag component and fallen timber with intact root-balls laying on the forest floor. Unstable root systems, leaning trees and hung up branches all create an overhead hazard for crews working near these root rot centers.

Falling of Snags & Danger Trees

In accordance with the Cutting Permit Authority and Work Safe BC Regulations, all snags and danger trees that endanger workers within a distance of 50m outside the cutblock boundaries, or within one and a half tree lengths, (whichever is greater), are approved for these harvest instructions. All danger trees and snags outside the cutblock boundaries that are required to be felled must be recorded on a map and provided to AVCF once falling has been completed. AVCF will be notified immediately if danger trees and/or snags are identified in groups and removal will result in the cutblock boundary being substantially impacted. Felled snags and danger trees up to 50m outside of the falling boundary meeting utilization specifications will be recovered.

One falling exception applies to Wildlife Tree Retention Areas (WTRA) - Snags or danger trees can be felled within a WTRA for safety reasons although only the portion of the felled snag or danger tree that falls outside the WTRA can be recovered.

Steep Grades

Several steep road grades (>18%) exist on Friesen Main from station 0+040 to 0+110m and 0+210 to 0+340m. Prior to commencing log hauling operations the contractor must perform a risk assessment of the current conditions and adjust hauling activities to fit the traction conditions. Hauling will not be permitted when ice and or snow is on the logging roads leading to or in the given setting (very low traction level). This has been determined using FERRIC step grade decent guidelines. The Ministry of Transportation guidelines are to be followed once hauling on the highway.

Rainfall Shutdown

CP-008 is to follow the following guidelines during operations:

- Shutdown Criteria: Activities must shut down if: The total rainfall reaches 36 mm in 24 hours. Onsite rain gauges should be used and monitored daily.
- Start-Up Criteria: Activities may start up when the total rainfall is equal to or less than 30 mm in 24 hours. Adequate recovery time should be given before harvesting operations commence after a shutdown.

Tenure Holders

Access to Block F4 is on Friesen Main, currently under permit to Alberni Valley Community Forest. This road branches off of Highway 4. There are no active tenure holders adjacent to this block.

Recreational Use

Evidence of all-terrain vehicles (ATV) use was noted along numerous old road grades in and adjacent to block F4. Adequate signs are to be posted to inform the public user groups of active blasting, logging and hauling during operations. Friesen Main will need to be closed to the public during these activities.

The AVCF Sproat Lake FDU is located in provincial hunting region 1-7. Local hunters frequent the area in the fall (Sept 10th – Dec 10th) and spring (April 1st – June 15th) during the hunting season in search for upland game birds, deer, wolf, cougar and bear. Ensure signs are posted at key locations prior to CP-008 development to notify hunters of forest activities in the area. In the fall, mushroom pickers were also observed utilizing adjacent road systems on AVCF's tenure to access suitable timber for mushroom harvesting.

Steep Slopes In Block

F4 is to be mechanically felled. Hand falling may be required for steeper slope areas that cannot be safely reached with the processor. Once felled the proposed harvest areas are to be hoe-chucked. Some areas of hoe-chuck may contain steeper slopes. These areas have been addressed on the harvest instructions map with a safety hazard alert (areas over 35% steep hoe- chuck). All ground-based operations must be conducted in compliance with the Occupational Health and Safety Regulations pertaining to slope limitations. The contractor is to satisfy themselves, by ground inspection that all identified ground-based logging areas are operable and can be harvested in a manner the will not compromise worker safety. Old grades and benches are to be utilized to reduce hazards.

Cutting Permit 008 Overview

Cutting Permit 008 (Block F4) is located approximately 20 km west of Port Alberni in the Sproat Lake Forest Development Unit of the Alberni Valley Community Forest Tenure. Access is directly off of Highway 4. Refer to Appendix 1 for Overview Map. Final block selection and layout targeted stands with merchantable volume and size and was based on utilizing ground based harvest systems and existing roads and trails as much as possible. Block boundaries were designed to meet visual quality objectives from Highway 4 and Sproat Lake while not restricting harvest opportunities as well as maintain water quality, biodiversity and recreation opportunities.

Table 3: Cutting Permit Area Attributes

Attributes	Block F4
Stand Type	Second Growth
General Species Composition	$Fd_{91\%}Cw_{6\%}Mb_{3\%}$
BEC information	CWHxm 01
Forest Health	Minor occurrence of Phellinus root rot
Windthrow Risk	Low to Moderate Risk

F4 Engineering Rationale

Block F4 is located mid-slope at an elevation range of 200m to 420m with a South aspect. The topography is benched with minor rock protrusions near the road cutbanks. There are four streams located in the vicinity of the harvest area, including Clutesi Creek, classified as an S2 Gully and is located outside the harvest area. Stream 3 is an S4 stream located on the western edge of the cutblock and is also outside the harvest area. Streams 2 and 3 are classified as S4 streams as they are located within the Sproat Lake Community Watershed. Falling and skidding across stream 1 and 2 is prohibited, except for at designated crossings as shown on the Harvest Plan map.

One Wildlife Tree Retention Area (WTRA) and one Timbered Leave Area (TLA) have been established. The WTRA is located along the eastern boundary adjacent to Clutesi Creek and contributes to the retention targets and also serves as the Riparian Reserve Zone for this fish-bearing stream. Several individual leave trees have been marked for retention to contribute to the visual objective of partial retention.

This block is to be harvested as a clearcut, with exception of the marked TLA and the leave tree area, using a ground based system. The entire block can be mechanically felled with the exception of areas marked as steep –hoechucking areas, which may require handfalling due to obstacles such as steep terrain and rock outcrops.

Individual retention of western red cedar and small non-merchantable douglas-fir is allowed along stream 1, 2 and 3 as well as small (0.1ha) concentrated patches throughout the block. Retention trees must be free of bark damage and consist of trees with good health and vigour.

The block was designed to meet the visual objective criteria for Partial Retention. For this reason, larger leave areas were retained to break up the appearance of the block from Sproat Lake. These patches will be available for harvest once the visual landscape is able to absorb the impact.

Road Construction

Road construction is a combination of re-construction and new construction. Table 4 summarizes each segment of road and its construction type. Road quarries are marked on the road construction maps.

Table 4: Road Construction Summary

Road Name	From Station:	To Station:	Section Length (m):	Status:	Timber mark:
Friesen Main	990	2689	1699	De-activated. Re-construction includes installation of culverts, brushing and widening roadside vegetation.	K2D 0R1
F4-1	0	82	82	New Construction	K2D 008
F4-2	0	224	224	New Construction. This road is a temporary road and is to be permanently deactivated and re-planted after completion of harvesting Operations.	K2D 008
F4-3	0	89	89	New Construction. This road is a temporary road and is to be permanently deactivated and re-planted after completion of harvesting Operations.	K2D 008
Total All Roads			**2094**		

Cruising

CP 008 was cruised to Ministry of Forests Standards with full measure plots established on a 100m x 100m cruise grid. This methodology resulted in a total of 17 plots for an average of 0.8 plots per hectare and an average of 4.1 cruised trees per plot. The following table summarizes the results of the cruise plan (excluding any outside RoW leading to the blocks).

Table 5: Cruise Summary

Attributes	Block F4
Net harvest area **(includes RoW volume not already removed)**	20.34
Species Composition	$Fd_{91\%}Cw_{6\%}Mb_{3\%}$
Avg m^3/ha	$433m^3$
Cruised Harvest Volume	$8833m^3$

Refer to Appendix 8 for the Cruise Report.

Appendices

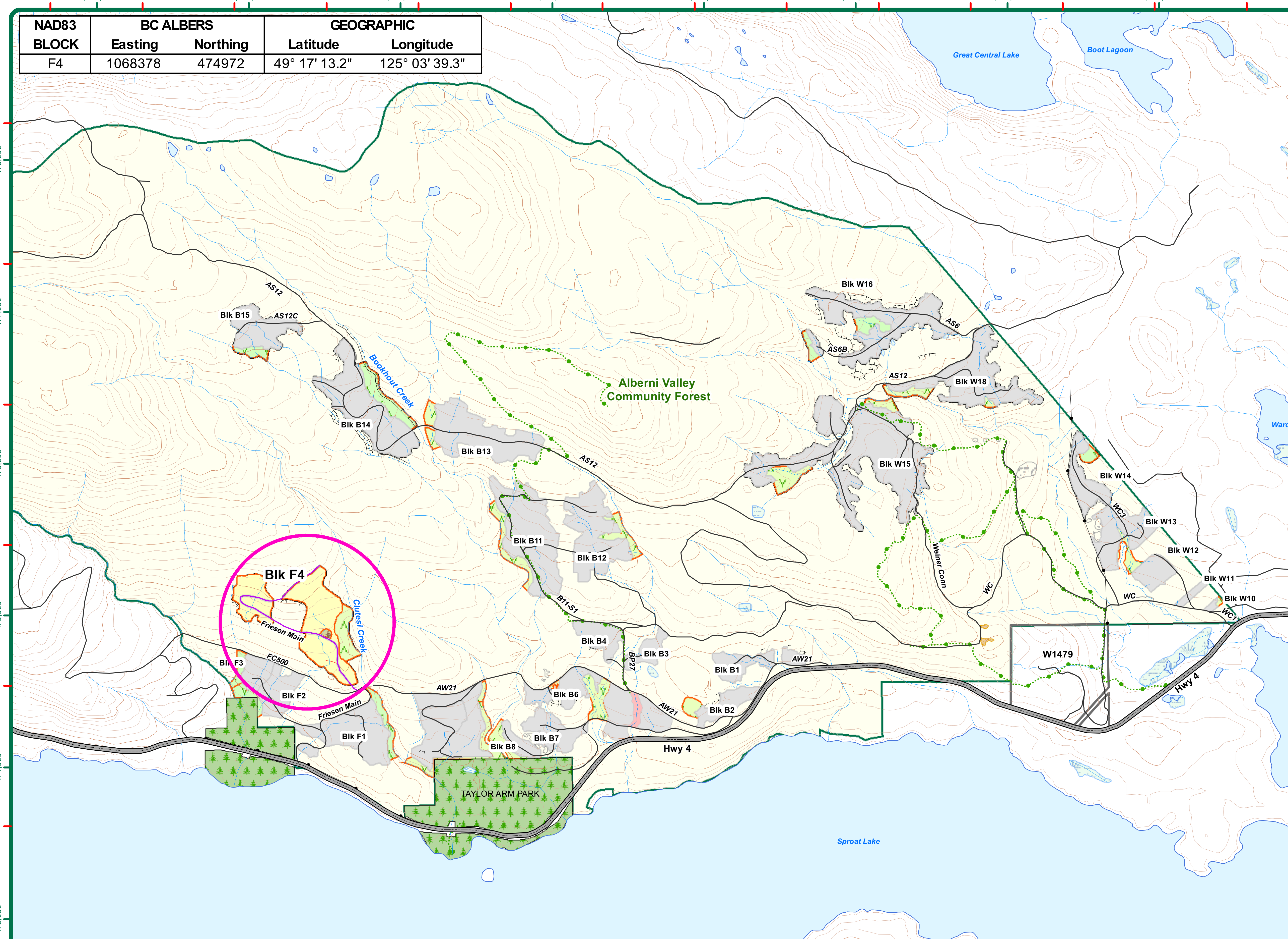
Appendix 1: CP 008 Overview Map

NAD83 BLOCK	BC ALBERS Easting	BC ALBERS Northing	GEOGRAPHIC Latitude	GEOGRAPHIC Longitude
F4	1068378	474972	49° 17' 13.2"	125° 03' 39.3"

Alberni Valley Community Forest K2D

Cutting Permit CP-008 Overview Map

1:25,000



Licensee: Alberni Valley Community Forest Corporation
Forest Region: Coast
Forest District: South Island
Reference Map: 92F024, 025, 026 F035, 036
Datum: NAD 83
Projection: BC Albers
Drafted: June 7, 2015
By: econ

- Block, Clear Cut
- Block, Partial Cut
- Block, Existing
- WTRA
- Park
- CommFor
- Highway
- Road, existing
- Recreation Trails
- Road, Reactivation
- Road, New
- Watercourse

Appendix 2: Harvest Map and Instructions

Alberni Valley Community Forest K2D

Sproat FDU

Harvesting Plan Map

Block F4

MAP 1 of 1

Falling Type	Ha	Volume
Handfalling	0	0
Mechanical	20.4	8833
TOTAL	20.4	8833
CRUISE VOL/HA (m3)		433
ENG VOL/HA (m3)		433
HAUL DISTANCE		

HARVEST METHODS		
System	Ha	Volume
R/W	0.0	0
Snorkel	0.0	0
Hoe Chuck	20.4	8833
Grapple	0.0	0
High Lead	0.0	0
Helicopter	0.0	0
Harvest Area	20.4	8833
R/W Removed	1.4	
WTRA	3.3	
TLA	0.3	
Gross Area	25.4	8833

VOLUME BY TIMBERMARK			
Timbermark	Type	Ha	Vol
K2D 008	CROWN	20.4	8833
			0
			0
			0
TOTAL		20.4	8833
Field Work:	K2 Forestry		
Checked By:	G.Knoll,RPF		
AVCF CORP:		DATE	
AVCF CORP:		DATE	

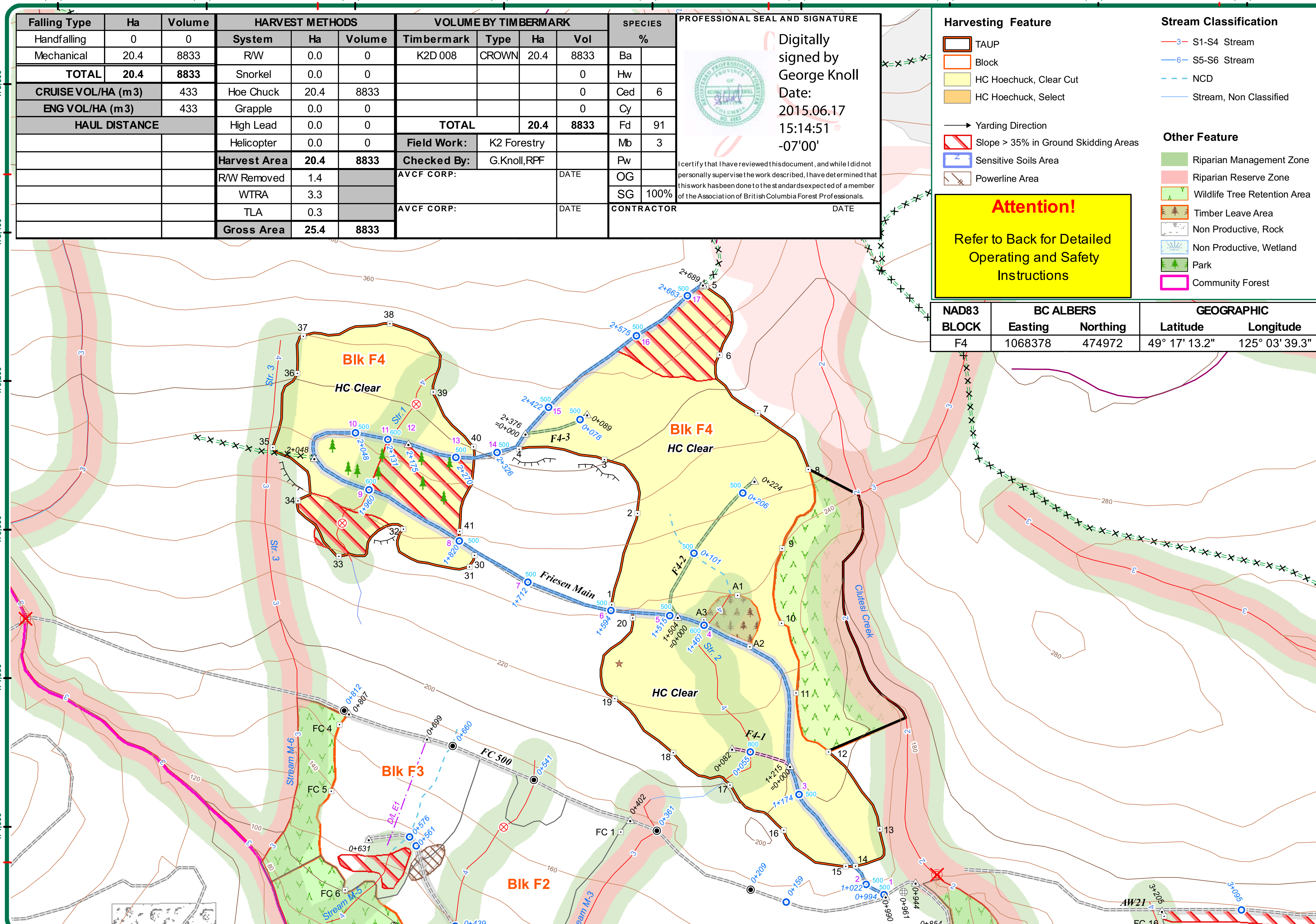
SPECIES	%
Ba	
Hw	
Ced	6
Cy	
Fd	91
Mb	3
Pw	
OG	
SG	100%

PROFESSIONAL SEAL AND SIGNATURE

Digitally signed by George Knoll
Date: 2015.06.17 15:14:51 -07'00'

I certify that I have reviewed this document, and while I did not personally supervise the work described, I have determined that this work has been done to the standards expected of a member of the Association of British Columbia Forest Professionals.

CONTRACTOR DATE



Attention!

Refer to Back for Detailed Operating and Safety Instructions

NAD83	BC ALBERS		GEOGRAPHIC	
BLOCK	Easting	Northing	Latitude	Longitude
F4	1068378	474972	49° 17' 13.2"	125° 03' 39.3"

Harvesting Feature

- TAUP
- Block
- HC Hoechuck, Clear Cut
- HC Hoechuck, Select
- Yarding Direction
- Slope > 35% in Ground Skidding Areas
- Sensitive Soils Area
- Powerline Area

Stream Classification

- S1-S4 Stream
- S5-S6 Stream
- NCD
- Stream, Non Classified

Other Feature

- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Non Productive, Rock
- Non Productive, Wetland
- Park
- Community Forest

1:5,000

Meters 0 50 100

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers
TSA:	38 Arrowsmith
TSB:	A
FIZ:	B
P.S.Y.U.:	471
Inv. Reg.:	5
Comp.:	4B (Sproat), 4C (Taylor)
Drafted:	May 26, 2015
By:	econ

- Falling Corner
- Landing, Perm., Temp.
- Station
- Culvert: New, Existing
- Bridge: New, Out
- Quarry
- Designated Crossing
- Root Rot Centre
- Swamp
- Wildlife Tree

Roads & Trails

- Highway / FSR
- Road, existing
- Road, engineered
- Road, to be re-activated
- Road, overgrown
- >10% Adverse Grade
- >18% Favourable Grade
- Old Grade
- Hiking Trail
- Rock Bluff
- Hydro Line

HARVESTING INSTRUCTIONS – OPENING # F4

ACCESS ROAD: Friesen Main **CUTTING PERMIT: N0. 8** **TIMBERMARK: K2D 008**

EMPLOYEE REQUIREMENTS

1) All employees, supervisors and contractors associated with these Harvesting Instructions shall be fully advised of its contents and requirements.
2) All litter including cable, oil buckets, grease tubes, newspapers and lunch garbage is to be removed from the site and disposed of appropriately.

WATER QUALITY

1) The overall objective of this cutblock is timber harvesting without impacting water quality.
2) All ditches and culverts **must** remain as free flowing as possible through all phases of harvesting.
3) Cutblock F4 lies within the Sproat Lake Community Watershed, sedimentation into streams is to be minimized to the fullest extent possible.
4) Cutblock F4 is within a Rainfall Shutdown Area with the following shutdown/start-up Criteria:
Shutdown Criteria: Activities must shut down if: The total rainfall reaches **75mm in 24 hours**. Onsite rain gauges should be used and monitored daily.
Start-Up Criteria: Activities may start-up when: The total rainfall is equal to or less than 30mm in 24 hours, or the water balance falls below 75mm. Soil drainage rate is 40mm in 24hrs. Refer to the Return to work guide in the tender document for more information.

FORESTRY

1) Invasive Plants: Broom occurs along sections of the high way on route to the setting. Follow FSP measures for invasive plants. Cut and remove plants in association with road reactivation, clean machinery as required. Monitor and treat broom and other invasive species during early establishment. Grass seed exposed soil on or adjacent to roads, trails, and landing sites as soon as possible following harvest.

FIRST NATIONS

1) This cutblock is in the Hupacusath traditional territory. If any additional potential culturally modified tree (CMT) (whether live or dead and standing or fallen) or any other cultural feature is encountered within the opening during any harvesting phase, operations will cease in the immediate vicinity of the CMT or cultural feature. Hupacusath First Nations is to be notified immediately upon discovery of any potential CMT or cultural feature.

FALLING of SNAGS and DANGER TREES

1) In accordance with WSBC Regulations, snags and danger trees within the cutblock and outside the cutblock boundaries for a distance of not more than 50 meters that endanger workers are approved for falling under the logging plan for this cutblock. **EXCEPT FOR AREAS ADJACENT TO ITLP PROPERTY FROM FC 10 TO 11.** Danger trees and snags outside this 50 meter hazard area that are required to be felled should be recorded on a map for future reference. Sanitation falling will proceed if the occasional stem is required to be removed along the cutblock boundary. The Ministry of Forests will be notified if danger trees and/or snags are identified in groups and removal will result in the cutblock boundary being substantially impacted. Snags and danger trees meeting utilization specifications will be recovered.
2) If a bear den or raptor nest is encountered during falling operations, the tree will be reserved from falling along with a protection patch of timber surrounding it. AVCF is to be notified immediately. If the bear den tree is partially cut operations will proceed in conformance with WSBC regulations.
3) Wildlife Tree Patches or Wildlife Tree Retention Areas have been established, and are marked on the 1:5000 map. Any danger trees felled within the WTP or WTRA will be left as Coarse Woody Debris.

CUTBLOCK BOUNDARY TREATMENTS

1) All marked boundary trees except snags and danger trees must remain standing during and after the completion of harvesting. Trees adjacent to edges that cannot be felled into the setting will require approval from AVCF prior to falling. AVCF is to be notified immediately.
2) Leave trees may be substituted if, for safety reasons, a faller feels it is necessary to do so, but alternate leave trees must be retained and should be well rooted and of the same species and diameter

YARDING and LOADING PRESCRIPTIONS

1) No roadside landing of logs within 3 meters of any streambank along all roadsides. All drainage structures will be maintained and remain functional.
2) Avoid excessive ground lead gouging due to surface erosion potential. If soil disturbance occurs, then grass seeding will be required.
3) During the bark peeling stage of growth, the tree bole is highly susceptible to damage. Contact with retention trees during harvesting operation should be avoided between April 1 st and June 15 th.
4) Leave trees may be substituted if, for safety reasons, a faller feels it is necessary to do so, but alternative trees must be retained and should be well rooted and of the same species, diameter and vigor.
5) No more than 10% of the retention trees in the aggregate or dispersed retention areas or single retention trees in this cutblock may have significant damage.
Significant damage to Hw, Fd, and Cw is defined as a tree with:
One or more wounds (i.e. exposed cambium) that girdle more than 1/3 the circumference of the stem.
Any wounds on a supporting root within one metre of the stem. A gouge – a wound that penetrates (splintered) into the sapwood or deeper.
Additionally, for Hw and Cw only: A wound >400cm^2 on the stem.

SAFETY

Road and in-block safety hazards associated with block F4 have been identified on the harvest and road instruction maps. In the event additional in-block safety hazards (temporary or permanent) are encountered or develop during road construction or harvesting phases, a plan must be developed to address the hazard. Any identified permanent hazards must be reported back to AVCF (using Hazard/Issue Report Form).

STEEP GRADES

Several steep grades (>18%) exist on Friesen Main. Prior to commencing log hauling operations the contractor must perform a risk assessment of the current conditions and adjust hauling activities to suit the traction conditions. Hauling for F4 is not permitted when ice and or snow is on the logging roads leading to or in the given setting (very low traction level). This has been determined using FERRIC steep grade decent guidelines. The Ministry of Transportation guidelines are to be followed when hauling on the highway.

SPECIFIC BLOCK COMMENTS

MACHINE OPERATORS WILL MONITOR SOILS FOR COMPACTION DURING RAIN EVENTS, AND MOVE TO DRIER AREAS WITHIN THE CUTBLOCK SHOULD COMPACTION AND/OR RUTTING OCCUR. LEAVE TREES HAVE BEEN DESIGNATED FOR RETENTION AND MARKED IN THE FIELD WITH ORANGE PAINT AND FALLING BOUNDARY RIBBON. LEAVE TREES MAY BE FELLED FOR SAFETY REASONS BUT ALTERNATIVE TREES OF THE SAME DIAMETER AND SPECIES MUST BE RETAINED TO REPLACE THE FELLED TREE.

HARVESTING ISSUES

MACHINE OPERATORS SHOULD BE AWARE OF STEEP HOECHUCKING AREAS WITHIN THE CUTBLOCK. THESE AREAS ARE IDENTIFIED ON THE HARVESTING MAP.

RIPARIAN MANAGEMENT STRATEGIES

Creek I.D.	CLASS	MANAGEMENT STRATEGIES FOR RIPARIAN MANAGEMENT ZONES (RMZ) INCLUDING PROTECTING STREAM
	NCD	- NCD(s) within the harvest area will be FX and YX. No RMZ is required. - Note all streams lie within the Sproat Lake Community Watershed, minimize sedimentation at all costs.
		STREAM REACH AND RMA IS OUTSIDE OF THE HARVEST AREA
Clutesi Creek	S2	FA YA NC
		STREAM REACH OUTSIDE HARVEST AREA, PORTIONS OF THE RMA WITHIN THE HARVEST AREA
Str. 3	S4	FA YA NC
		PORTIONS OF STREAM REACH AND RMA ARE WITHIN THE HARVEST AREA
Str. 1	S4	FA YX at designated crossings only. NC
Str. 2	S4	FA YA NC
		PRESCRIPTION DEFINITIONS
	YX	Yard across Acceptable
	FX	Fall Across Accepable
	FA/BL	Fall Away. Timber is to be felled away. Leaners and hazard trees that cannot be safely felled away shall be felled and left bridging the stream.
	FA	Fall Away. Timber is to be felled away.
	YA	Yard Away. Timber is to be yarded away. In order to improve deflection, cables are allowed to be suspended above the stream. **Non-fish streams**: merchantable leaners and danger trees that have been felled across the stream will, by necessity, be yarded across the stream. **Fish streams**: Leaners and danger trees which have been felled across the stream will be left unless detrimental to the stream.
	HH	100% harvested (no retention of saplings)
	RS	Retain saplings on the streambanks (non-merchantible)
	FE	Feathered edge.
	BPT	Blue painted trees (selected for removal). Faller's choice of alternate tree if unable to fall painted tree safely.
	NHZ	No harvest zone. Trees are to be felled away from the zone. Safe trees that cannot be felled away are to be left as part of the NHZ. Danger trees **must** be felled and will be left for future LWD or be removed if detrimental to the stream.
	MFZ	Machine free zone.
	MC	Machine Clean transportable introduced large woody debris (LWD) and accumulations concurrent with yarding.
	HC	Hand Clean introduced transportable debris.
	NC	No cleaning required. Keep channel free on introduced debris concurrent with yarding.

Appendix 3: Road Construction Map and Instructions

ROAD NAME	START	END	TOTAL	TYPE OF WORKS\COMMENTS
Friesen Main	0+990	2+689	1+699	Install culverts, ditching
TOTAL REACTIVATION			1+699	
Spur F4-1	0+000	0+082	0+082	New Construction
Spur F4-2	0+000	0+224	0+224	Temporary Road - Permanent deactivation required at completion of harvesting
Spur F4-3	0+000	0+089	0+089	Temporary Road - Permanent deactivation required at completion of harvesting
TOTAL NEW CONSTRUCTION			0+395	

CULVERTS		
SIZE	TYPE	NUMBER
500	CMP	16
600	CMP	3
800	CMP	1
1000	CMP	
	TOTAL:	20
Field Work:	K2 Forestry	
Checked By:	G.Knoll,RPF	

AVCF CORP: DATE

AVCF CORP: DATE

PROFESSIONAL SEAL AND SIGNATURE

Digitally signed by George Knoll
Date: 2015.06.17 15:18:05 -07'00'

I certify that I have reviewed this document, and while I did not personally supervise the work described, I have determined that this work has been done to the standards expected of a member of the Association of British Columbia Forest Professionals.

CONTRACTOR DATE

Attention!

Refer to Back for Detailed Operating and Safety Instructions

MAP 1 of 1

Alberni Valley Community Forest K2D

Sproat FDU

Road Reactivation & Road Construction

Block F4

N

1:5,000

0 50 100 200 Meters

Licensee:	Alberni Valley Community Forest Corporation
Forest Region:	Coast
Forest District:	South Island
Reference Map:	92F024, 025, 026 F035, 036
Datum:	NAD 83
Projection:	BC Albers, Geographic
TSA:	38 Arrowsmith
TSB:	A
FIZ:	B
P.S.Y.U.:	471
Inv. Reg.:	5
Comp.:	4B (Sproat), 4C (Taylor)
Drafted:	May 29, 2015
By:	econ

Timbermark K2D-0R1

NAD83	BC ALBERS		GEOGRAPHIC	
BLOCK	Easting	Northing	Latitude	Longitude
F4	1068378	474972	49° 17' 13.2"	125° 03' 39.3"

- Falling Corner
- Landing, Perm., Temp.
- Station
- Culvert: New, Existing
- Bridge: New, Out
- Quarry
- Designated Crossing
- Spoil Site
- Swamp
- Wildlife Tree

- Ditch Cleaning
- End Haul
- >10% Adverse Grade
- >18% Favourable Grade
- Road, to be constructed
- Road, to be re-activated
- Steep Areas, >35% in Ground Based Areas
- Sensitive Soils Area

Road Feature

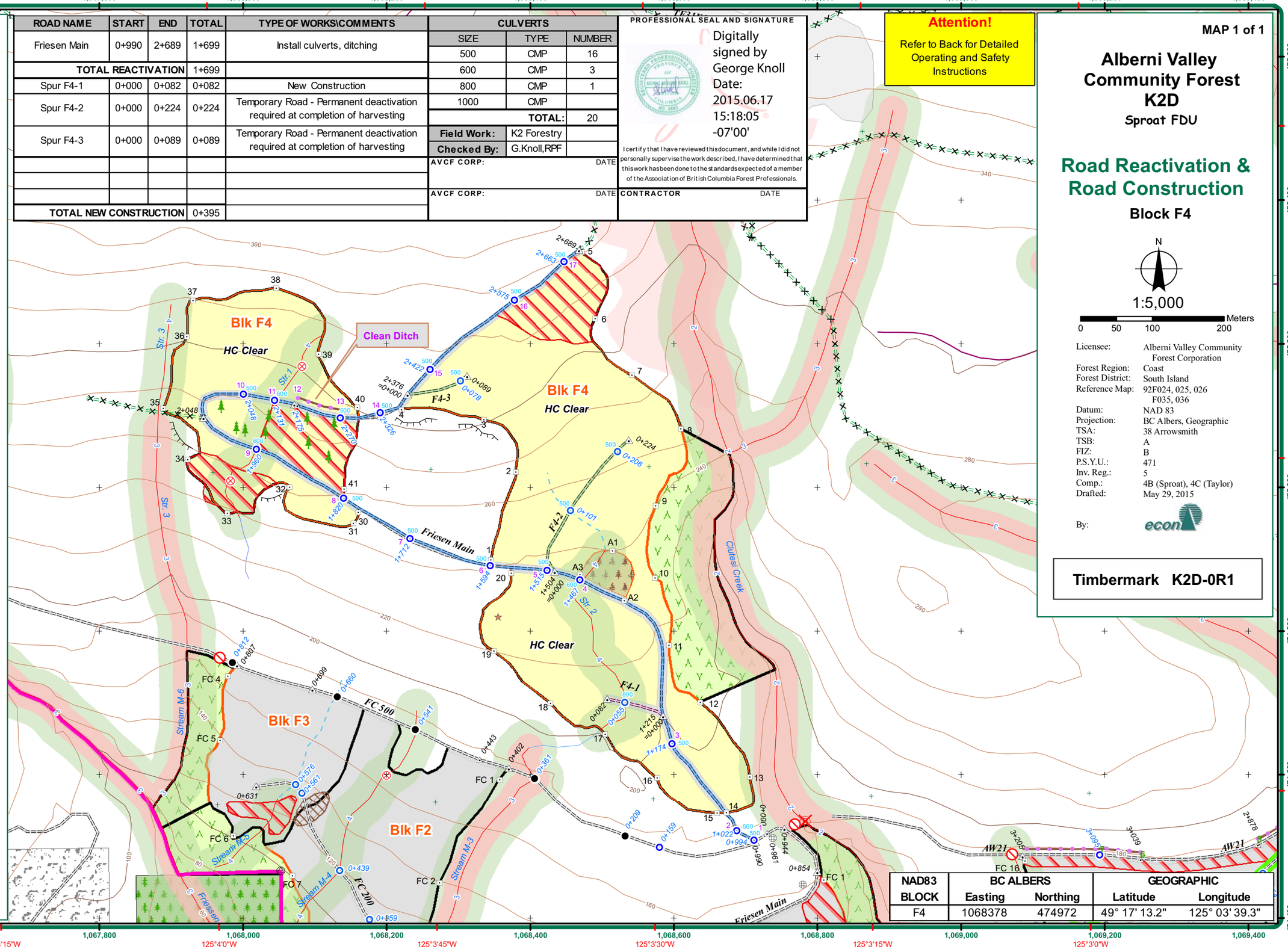
- Highway
- Road, existing
- Road, temporary
- Trail, existing
- Trail, temp
- Old Grade
- Recreation Trail

Water Feature

- S1-S4 Stream
- S5-S6 Stream
- NCD Non Classified Drainage
- Unclassified Creek
- Wetland
- Lake

Other Feature

- Block, new
- Block, existing
- Riparian Management Zone
- Riparian Reserve Zone
- Wildlife Tree Retention Area
- Timber Leave Area
- Park
- Community Forest



ROAD INSTRUCTIONS – OPENING # F4

ACCESS ROAD: Friesen Main **ROAD PERMIT: R18553** **TIMBERMARK: K2D 0R1**

ROAD CONSTRUCTION SUMMARY

Road Name	Start Station	End Station	Type of Works/Comments
Friesen Main	0+990	2+689	Re-construction. Install culverts, ditching.
Spur F4-1	0+000	0+082	New construction.
Spur F4-2	0+000	0+224	New construction. Temporary road.
Spur F4-3	0+000	0+089	New construction. Temporary road.

STREAM CROSSINGS and CULVERT INSTALLATIONS

Road Name	Station	Riparian ID	Riparian Class	Debris Transport Potential	Culvert/ Bridge Size	Designed Peak Flow	Special instructions for operations within or adjacent to RMA
Friesen Main	1+467	Str. 2	S4	Low	600	Q100	OPENING F4 LIES WITHIN THE SPROAT LAKE COMMUNITY WATERSHED. ALL STREAM CROSSINGS ARE TO BE ARMORED WITH COARSE ROCK MATERIAL TO MINIMIZE THE TRANSPORT OF FINES DOWN STREAM.
Friesen Main	1+960	Str. 1	S4	low	600	Q100	
Friesen Main	2+131	Str. 1	S4	low	600	Q100	
Spur F4-1	0+055	Str. 2	S4	Low	800	Q100	
Spur F4-2	0+101	NCD	NCD	Low	500	Q100	

EMPLOYEE REQUIREMENTS

1) All employees, supervisors and contractors associated with these Road Instructions shall be fully advised of its contents and requirements.

2) All litter including cable, oil buckets, grease tubes, newspapers and lunch garbage is to be removed from the site and disposed of appropriately.

WATER QUALITY

1) The overall objective of this cutblock is timber harvesting without impacting water quality.

2) Cutblock F4 lies within the Sproat Lake Community Watershed, sedimentation into streams is to be minimized to the fullest extent possible, follow the listed SOP's below:

a.Ditch Cleaning: where needed, ditches are to be cleaned when conditions are dry. Ditchspoil is not to be windrowed along the road shoulder. On moderate slopes, the ditchspoil could be thinly spread on the slope below the road, but not heaped or piled against trees. Where the road is on steep slopes, the ditchspoil should be endhauled to a suitable spoil site.

b. Culvert replacement: Where required culvert replacements are to be done during dry weather (except for emergency repairs or replacements). The inlet and outlet areas on new culverts, and the adjacent fill slopes, are to be armoured to prevent erosion or sloughing into the creek.

c. Rock Ballasting of road surface: For new road construction, where the road is close to a stream channel,the road surface is to be ballasted with clean rock. The road surface is also to be rock ballasted for 30 metres either side of stream culverts.

d. Road grading practices: grading is to be avoided during heavy rain. e. Shutdown or harvest completion: In preparation for a shutdown for a period longer than 30 days or at a harvest completion, the following measures will be taken:

i. No excavated or endhauled material will be left piled in such a way as to become unstable duringthe shutdown period. Spoil sites, piles and fills willbe sloped uniformly to prevent instability.

ii. Ditches and culverts will be left clear and functional, with adequate inlet basins to minimize the potential for plugging.

iii. On sections of steep grades, cross ditches and back-up swales will be constructed where needed to minimize ditch erosion.

iv. If road construction has reached a drainage course but a drainage structure has not been installed prior to shutdown, the drainage course will be left open and unimpeded.

v. Where exposed silty soils could erode and enter surface streams or ditches connected to streams, silt fences, hay bales or erosion blankets will be applied as needed for temporary protection.

4) Cutblock F4 is withina Rainfall Shutdown Area with the following shutdown/start-up Criteria:

Shutdown Criteria: Activities must shut down if: The total rainfall reaches **75mm in 24 hours**. Onsite rain gages should be used and monitored daily.

Start-Up Criteria: Activities may start-up when: The total rainfall is equal to or less than 30mm in 24 hours, or the water balance falls below 75mm. Soil drainage rate is 40mm in 24hrs. Refer to the Return to work guide in the tender document for more information.

FORESTRY

1) Invasive Plants: Broom occurs along sections of the high way on route to the setting. Follow FSP measures for invasive plants. Cut and remove plants in association with road reactivation, clean machinery as required. Monitor and treat broom and other invasive species during early establishment. Grass seed exposed soil on or adjacent to roads, trails, and landing sites as soon as possible following harvest.

FIRST NATIONS

1) This cutblock is in the Hupacusath traditional territory. If any additional potential culturally modified tree (CMT) (whether live or dead and standing or fallen) or any other cultural feature is encountered within the opening during any harvesting phase, operations will cease in the immediate vicinity of the CMT or cultural feature. Hupacusath First Nations is to be notified immediately upon discovery of any potential CMT or cultural feature.

FALLING of SNAGS and DANGER TREES

1) In accordance with the WCB Regulations, snags and danger trees within the cutblock and outside the cutblock boundaries for a distance of not more than 50 meters that endanger workers are approved for falling under the logging plan for this cutblock. Danger trees and snags outside this 50 meter hazard area that are required to be felled should be recorded on a map for future reference. Sanitation falling will proceed if the occasional stem is required to be removed along the cutblock boundary. The Ministry of Forests will be notified if danger trees and/or snags are identified in groups and removal will result in the cutblock boundary being substantially impacted. Snags and danger trees meeting utilization specifications will be recovered.

2) If a bear den or raptor nest is encountered during falling operations, the tree will be reserved from falling along with a protection patch of timber surrounding it. AVCF is to be notified immediately. If the bear den tree is partially cut operations will proceed in conformance with WCB regulations.

3) Wildlife Tree Patches or Wildlife Tree Retention Areas have been established, and are marked on the 1:5000 map. Any danger trees felled within the WTP or WTRA will be left as Coarse Woody Debris.

CUTBLOCK BOUNDARY TREATMENTS

1) All marked boundary trees except snags and danger trees must remain standing during and after the completion of harvesting. Trees adjacent to edges that cannot be felled into the setting will require approval from AVCF prior to falling. AVCF is to be notified immediately.

2) Leave trees may be substituted if, for safety reasons, a faller feels it is necessary to do so, but alternate leave trees must be retained and should be well rooted and of the same species and diameter

ROAD CONSTRUCTION PRESCRIPTIONS

1) R/W clearing widths to be 20 meters unless a larger width is required for safety or otherwise prescribed.

2) Prior approval must be obtained from AVCF if falling beyond right-of-way clearing is required for spoil sites or quarries.

3) Proposed cross-drain culvert locations are approximate. Site specific installation to within ±25m is acceptable. Installation beyond this distance constitutes a 'change of plan' and requires prior approval from AVCF.

4) Equipment must not be fuelled or serviced within the riparian management area (RMA) of a stream, lake or wetland. Do not park any equipment within an RMA overnight.

5) Ensure that licensed water works are notified of road activities 48 hours prior to activity.

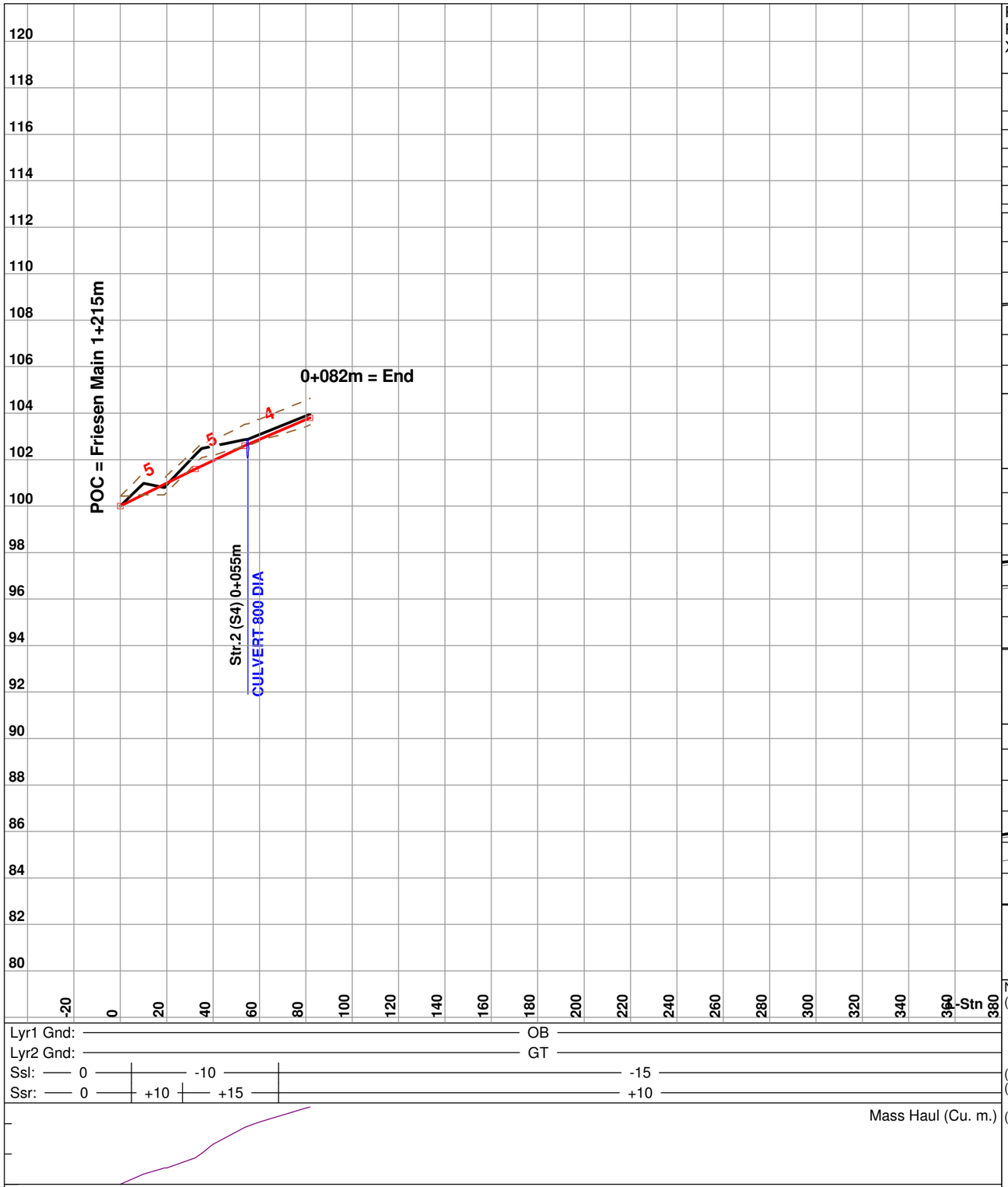
6) RMA distances: STREAMS: S1 - 70 meters, S2 – 50 meters, S3 – 40 meters, S4 – 30 meters, S5 – 30 meters, S6 – 20 meters, LAKES: L1 – 10 meters, L3 – 30 meters, WETLANDS: W1, W5 – 50meters, W3 – 30 meters.

7) Avoid quarry locations within the RMA of any stream; where avoidance is not practical, quarries may be located within the RMA of a S6 stream if no impacts (i.e. increased sedimentation) will occur to the stream. All other streams (i.e. S1 to S5) require prior approval from AVCF before a quarry may be located within its RMA. Do not deck or process wood within RMA's.

SAFETY

Road and in-block safety hazards associated with block F4 have been identified on the harvest and road instruction maps. In the event additional in-block safety hazards (temporary or permanent) are encountered or develop during road construction or harvesting phases, a plan must be developed to address the hazard. Any identified permanent hazards must be reported back to AVCF (using Hazard/Issue Report Form).

Appendix 4: Road Designs

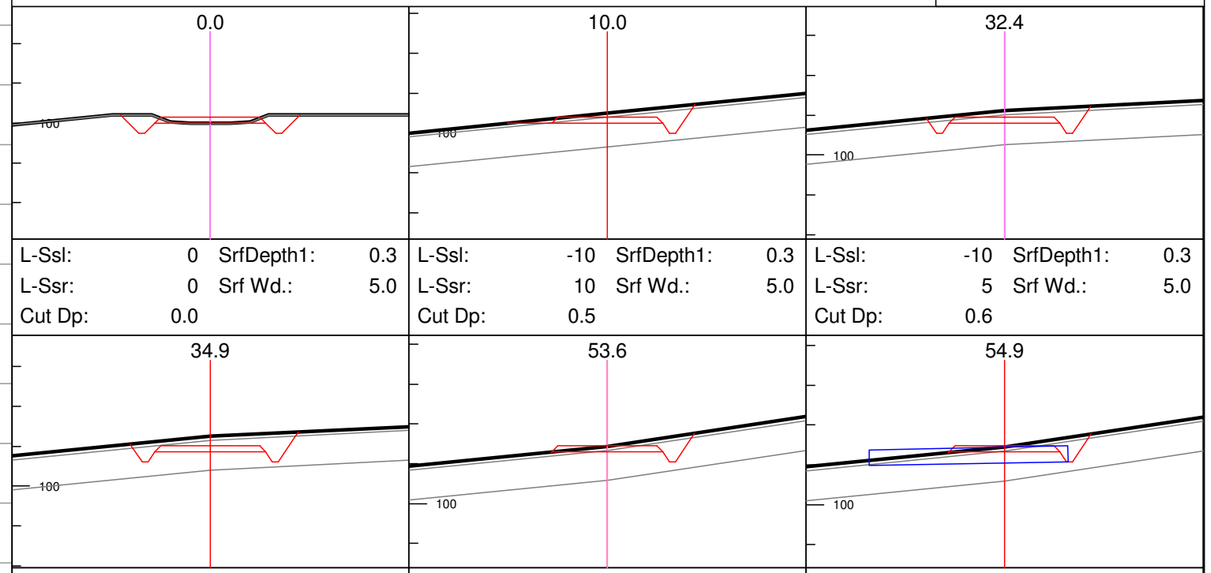


Profile Vert Scale 1:200
Profile Horz Scale 1:2000
X-section Scale 1:300

Alberni Valley Community Forest

LEGEND

- Rock Layer
- Profile Subgrade
- Profile/Plan P-line Topography
- Profile/Plan Slope Stakes
- Culverts



Notes:
(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) 5.6m running surface width.
(3) Cross-drain culvert locations are approximate.
(4) Refer to the Road Instruction map for additional detail.

Culvert Summary

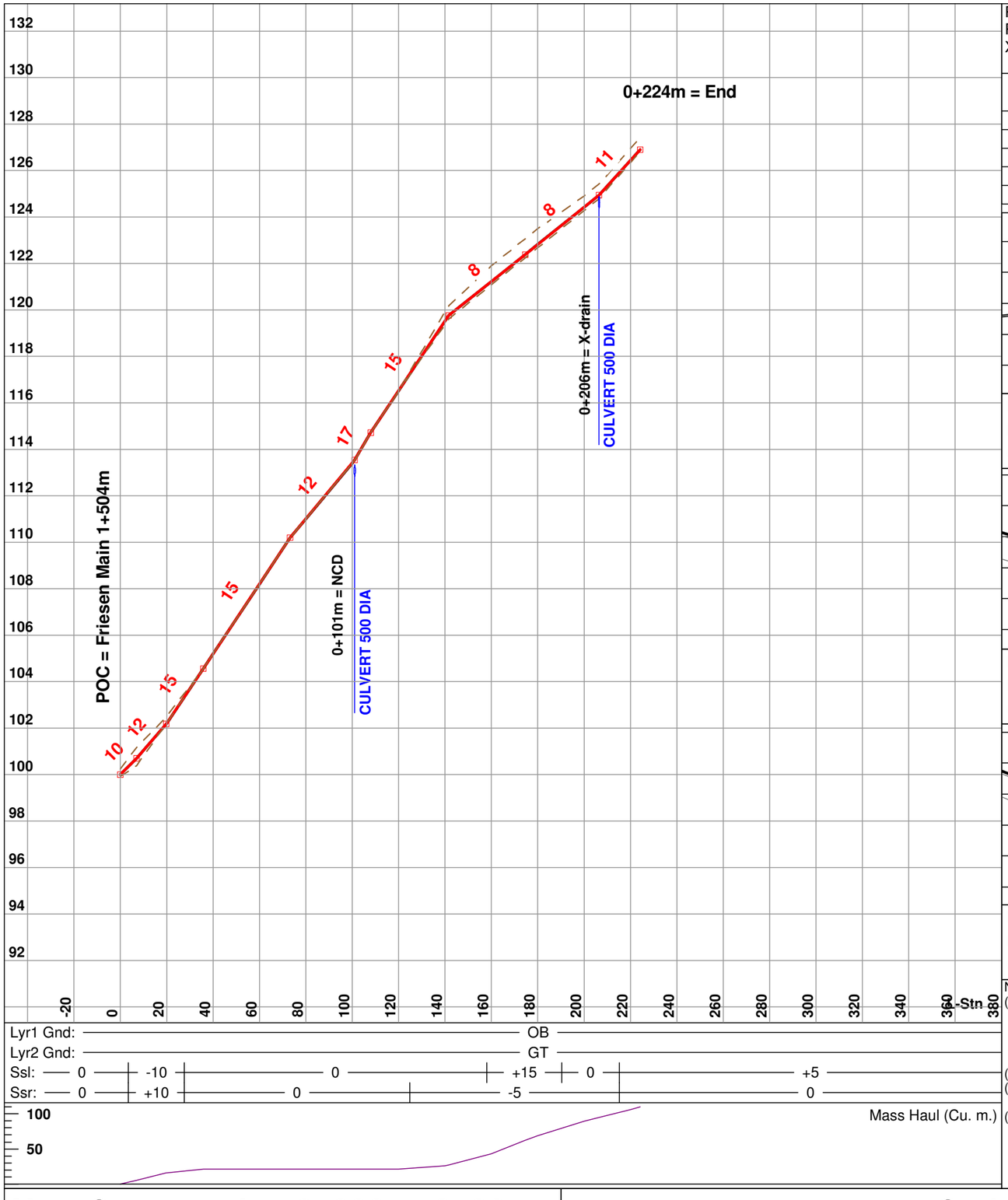
P-Stn m.	Cul DIA mm.	Cul Len m.
54.9	800	10.0

Designed by: K2 Forestry Services Ltd.

New Construction 0+000 to 0+082

Cutblock: F4 Road:Spur F4-1

15/06/17

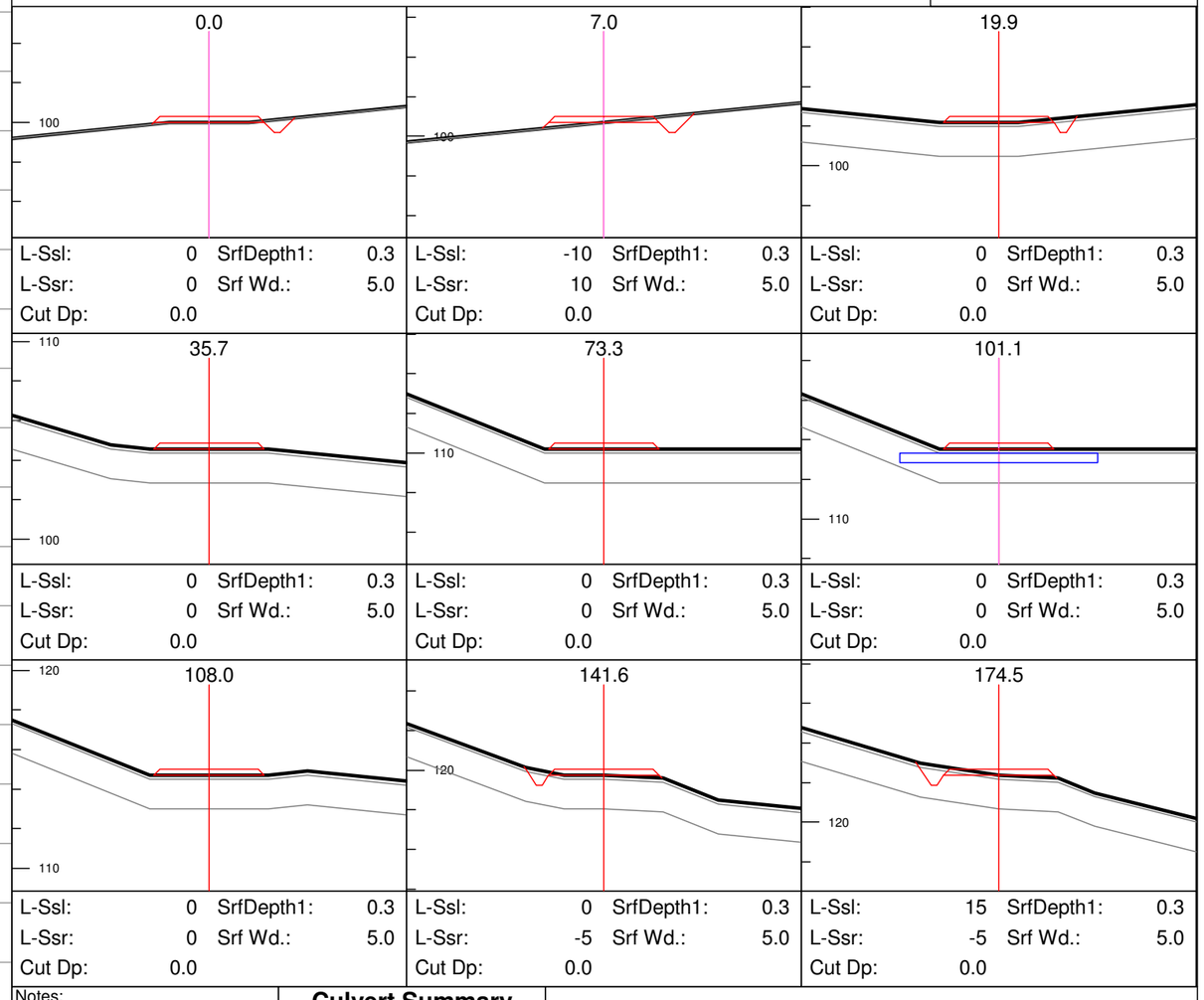


Profile Vert Scale 1:200
Profile Horz Scale 1:2000
X-section Scale 1:300

Alberni Valley Community Forest

LEGEND

- Rock Layer
- Profile Subgrade
- Profile/Plan P-line Topography
- Profile/Plan Slope Stakes
- Culverts



Notes:
(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) 5.6m running surface width.
(3) Cross-drain culvert locations are approximate.
(4) Refer to the Road Instruction map for additional detail.

Culvert Summary

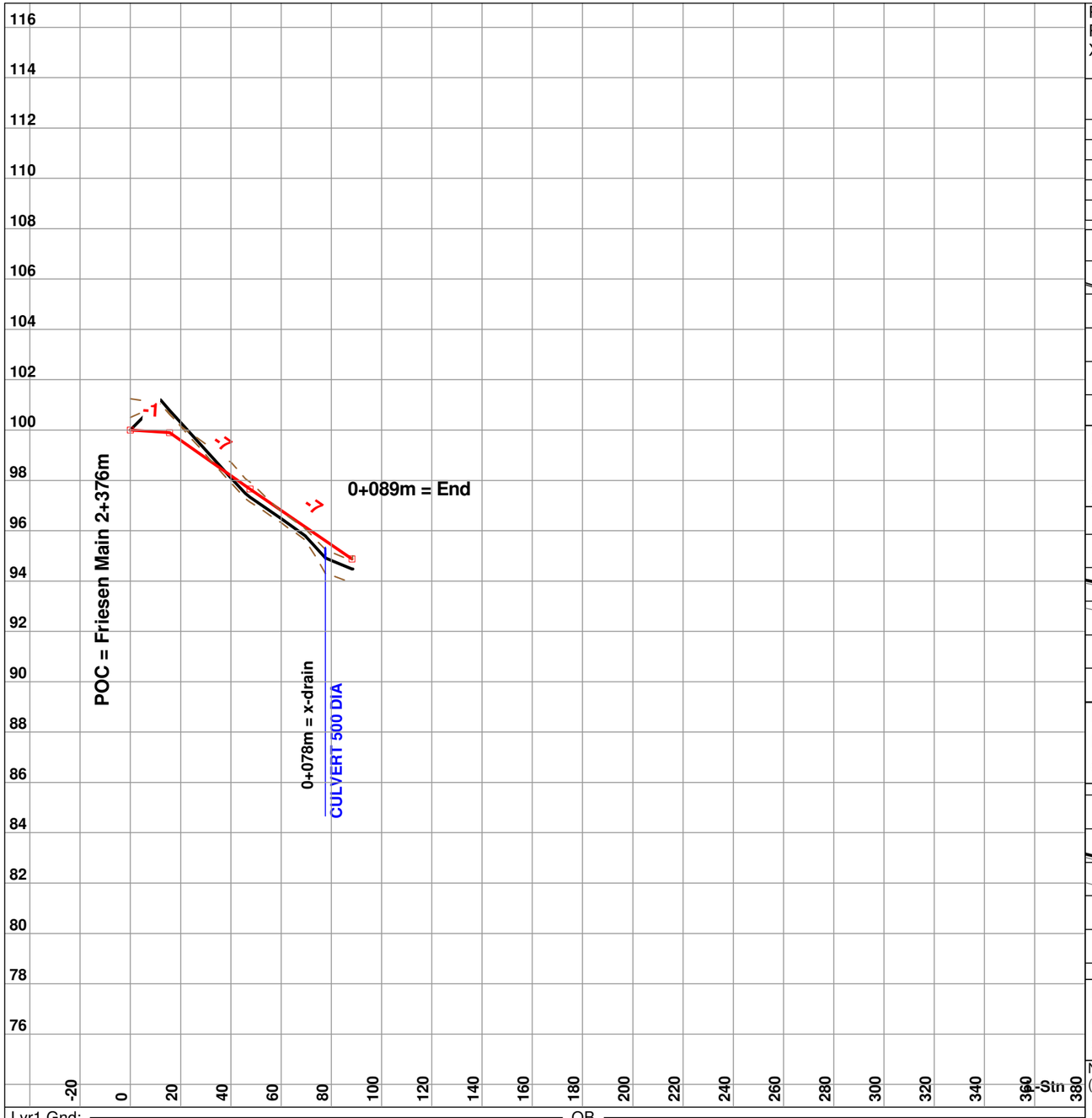
P-Stn m.	Cul DIA mm.	Cul Len m.
101.1	500	10.0
206.4	500	10.0

Designed by: K2 Forestry Services Ltd.

New Construction 0+000 to 0+224

Cutblock: F4 Road: F4-2

15/06/17

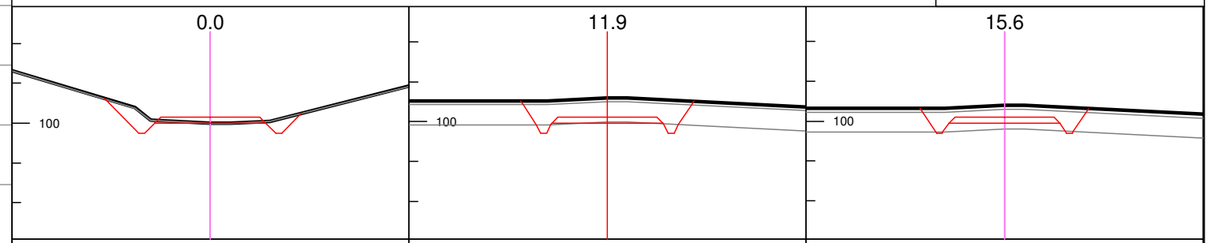


Profile Vert Scale 1:200
Profile Horz Scale 1:2000
X-section Scale 1:300

Alberni Valley Community Forest

LEGEND

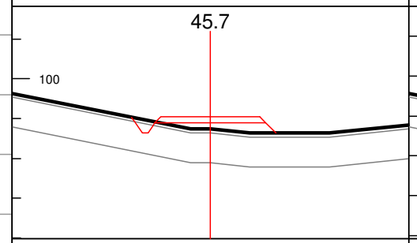
- Rock Layer
- Profile Subgrade
- Profile/Plan P-line Topography
- Profile/Plan Slope Stakes
- Culverts



L-Ssl:	5	SrfDepth1:	0.3
L-Ssr:	0	Srf Wd.:	5.0
Cut Dp:	0.0		

L-Ssl:	-5	SrfDepth1:	0.3
L-Ssr:	0	Srf Wd.:	5.0
Cut Dp:	1.3		

L-Ssl:	-5	SrfDepth1:	0.3
L-Ssr:	0	Srf Wd.:	5.0
Cut Dp:	0.9		



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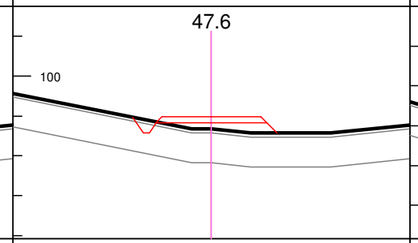
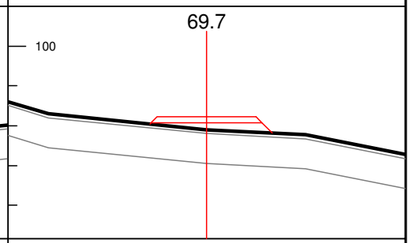
Cut Dp:	-0.3		



L-Ssl:	0	SrfDepth1:	0.3
L-Ssr:	-10	Srf Wd.:	5.0
Cut Dp:	-0.3		



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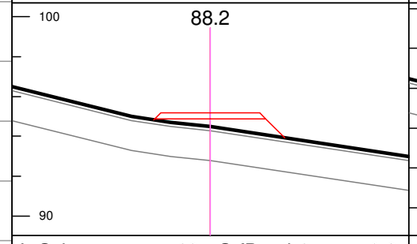
Cut Dp:	-0.3		



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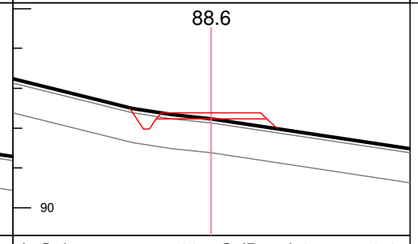
L-Ssr:	-15	Srf Wd.:	5.0
Cut Dp:	-0.4		



L-Ssl:	10	SrfDepth1:	0.3
L-Ssr:	-15	Srf Wd.:	5.0
Cut Dp:	0.0		

Notes:
(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) 5.6m running surface width.
(3) Cross-drain culvert locations are approximate.
(4) Refer to the Road Instruction map for additional detail.

Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.
77.6	500	10.0

Designed by: K2 Forestry Services Ltd.

New Construction 0+000 to 0+089

Cutblock: F4 Road: F4-3

15/06/17

Appendix 5: Site Plan and Site Plan map

CUTBLOCK AND ROAD SITE PLAN

CUTBLOCK IDENTIFICATION				
Licence: K2D/AVCF	Cutting Permit: 8	Block: F4	Timber Mark K2D 008	FDU: A (Sproat)
Silviculture System: Retention	Opening Number: 92F.025	Location: Sproat Lake	Lattitude: 49° 17' 13''	Longitude: 125°03' 39''
TAUP(ha): 25.47	NAR (ha): 20.34	NP NAT (ha): 3.62	NP UNN (ha /%): 1.51/5.9%	P.A.S. Limit (%): 7 %

Road Name	Section	Length	Location
Spur F4-1	0+000 to 0+082 New Construction	82 m	125°03'39''W // 49°17'13''N
Spur F4-2	0+000 to 0+224 Temporary Road	224 m	125°03'39''W // 49°17'13''N
Spur F4-3	0+000 to 0+089 Temporary Road	89 m	125°03'39''W // 49°17'13''N

SOIL DISTURBANCE				
SU	Compaction	Displacement	Surface Erosion	Soil Disturbance Limit (%)
A	Low	Moderate	High	5
COMMENTS	Use puncheon or rubber matting in sensitive areas and **stop work if the following soil disturbances cannot be avoided**: >Wheel/Track Ruts, Compacted Areas, Gouges, Scalps< Rehabilitate compacted areas and roadsides by de-compacting with hoe (preferably grapple attachment) while avoiding scalps larger than 1.5 x 1.5 m. Grass seed exposed mineral soil within 1 year of completion of harvest. Wide gouge and wide scalp are not countable soil disturbance categories in de-stumping areas. Maximum Roadside Disturbance Limit: 25%			

RESULTS & STRATEGIES	
RESULT OR STRATEGY	HOW THE STRATEGY OR RESULT APPLIES TO THE SITE
5.1.1a Order Establishing Sproat Lake Landscape Unit and Objective – Objective 1: Old Growth Management Areas (OGMAs)	• The proposed harvest area is within the Sproat Lake Landscape Unit. • OGMAs have been established for the Sproat Lake Landscape Unit on July 18, 2005. • OGMA 3106 is located beside the East side of block F4. A 20m buffer exists between block F4 and OGMA 3106.
5.1.1b Order Establishing Sproat Lake Landscape Unit and Objective – Objective 2: Wildlife Tree Retention (WTR)	• The proposed harvest area is within the Sproat Lake Landscape Unit. • A 3.3 ha WTRA has been retained adjacent to the block, meeting the minimum requirements of 12% set out in the approved landscape unit plan for areas within the CWH xm BEC subzone. This WTRA contains second growth Fd (Cw) representative of the pre-harvest stand. • AVCF will ensure that the 5 year average of WTR will met the minimum requirements set out in the approved landscape unit plan for areas within the CWH mm BEC subzone by ensuring that

	each individual block meets this target. • AVCF will ensure that the WTR are distributed across the landscape by ensuring that each WTR is directly adjacent to their corresponding cutblock, which is planned to be distributed across the license area. Permissible activities that may occur for this WTRA include: ○ Removal of danger trees, ○ WTPs with a high likelihood of windthrow may be pruned or topped to maintain the integrity of the WTP.
5.1.1c Order Establishing Sproat Lake Landscape Unit and Objective – Objective 3: Special Management Zone 17 (SMZ 17)	• The proposed harvest area does not lie within a SMZ, results and strategies do not apply.
5.1.2a Vancouver Island Land Use Plan Higher Level Plan Order – Objective 1a: Sustain forest ecosystem structure and function in SMZs	• The proposed harvest area does not lie within a SMZ, results and strategies do not apply.
5.1.2b Vancouver Island Land Use Plan Higher Level Plan Order – Objective 1b: Sustain forest ecosystem structure and function in SMZs.	• The proposed harvest area does not lie within a SMZ, results and strategies do not apply.
5.1.2c Vancouver Island Land Use Plan Higher Level Plan Order – Objective 1c: Sustain forest ecosystem structure and function in SMZs.	• The proposed harvest area does not lie within a SMZ, results and strategies do not apply.
5.1.2d Vancouver Island Land Use Plan Higher Level Plan Order – Objective 2: Recovering damaged timber within SMZs.	• The proposed harvest area does not lie within a SMZ, results and strategies do not apply.
5.2.1 Soils (FPPR s.35-36)	• Soil disturbance limits comply with Section 35 of the FPPR. Limits are listed in SOIL DISTURBANCE section of the Site Plan. • Permanent access structures for the development are 5.9%, below the 7% limit set in FPPR S.36.
5.2.2 Wildlife – MAMU (FPPR s.7)	• The Notice specifies the amount, distribution and attributes of wildlife habitat required for Marbled Murrelet and consequently a result or strategy is required. The harvest area is a second growth Douglas fir stand; poor Murrelet habitat.

CUTBLOCK AND ROAD SITE PLAN

5.2.3 Water, Fish, Wildlife and Biodiversity within Riparian Areas (FPPR s.47-52)	• For each riparian class of stream found in and adjacent to the harvest area, the minimum riparian management area (RMA) width, riparian reserve zone (RRZ) width and riparian management zone (RMZ) width, on each side of the stream, are as per the table in FPPR 47(4). • All RMA infringements on streams and wetlands are due to stream crossings that cannot be avoided and or there is no other practical option for locating the road FPPR 50(1)(a), FPPR 50(1)(b), FPPR 51(1)(c).
5.2.4 Community Watersheds (FPPR s.8.2)	• The proposed harvest area is within the Sproat Lake Community Watershed. • CWAP recommendations have been followed and assessments completed to ensure low to moderate material adverse hydrological effects will occur as a result of forest practices.
5.2.5 Wildlife and Biodiversity – Landscape Level (FPPR s.64-65)	• The net area to be reforested is in accordance with the FPPR Sections 64 (less than 40ha) and 65 (it is not adjacent an existing cutblock).
5.2.6 Wildlife and Biodiversity – Stand Level (FPPR s.66-67)	• Wildlife tree retention targets are in accordance with the results or strategy for the approved Sproat Lake Landscape Unit Plan Objective 2. (FSP s. 5.1.1b) • No signs of bear dens were observed during field work.
5.2.7 Cultural Heritage Resources (FPPR s.10)	• It is the responsibility of the licensee to ensure all First Nations parties with aboriginal title are accommodated. Information sharing with the Hupacasath First Nations has occurred and is being completed by the AVCF manager. • If, during harvesting, any evidence of traditional use or cultural heritage values is found within or surrounding the area, notify the AVCF Manager and the Ministry of Forests Aboriginal Liaison Officer and cease work.
5.3.1 Visual Quality Objectives (FPPR s.7 – GAR Order)	• A visual impact assessment (VIA) was completed by ECON Forest Consulting on June 1, 2015. This block is located within Visual Landscape Inventory polygon #3721 which has a Visual Quality Objective of Partial Retention. The block is visible from Sproat Lake, but appears small in scale and natural in appearance. As determined by the VIA, it meets the criteria for partial retention from established viewpoints.

CUTBLOCK AND ROAD SITE PLAN

STOCKING STANDARDS

SU	Standards ID	NAR (ha)	Biogeoclimatic Ecosystem Classification				Regeneration Method	Preferred Species	Acceptable Species
			Zone	Subzone	Variant	Site Series			
A	1037530	20.34	CWH	xm	1	01_{100}	Plant	Fd	Hw, Cw, Pw[22]

([22]) Risk of white pine blister rust. SU B is a partial cut area. Trees marked for removal are painted with blue dots. Fill planting with Fd will be determined post-harvest to ensure minimum adequate site occupancy and stocking such that a free growing stand is maintained.

SU	Regen. Date (yrs)	FG Date Late (yrs)	MITD (m)	TSS (sph)	MSSp (sph)	MSSp (sph)	Min. FG Ht. by Species		Crop Tree to Brush Ratio %)
							Species	Ht (m)	
A	3	11	2.0	900	500	400	Fd Hw Cw Pw	3.0 2.0 1.5 2.5	150

CUTBLOCK AND ROAD SITE PLAN

CRITICAL FACTORS AND REGENERATION COMMENTS

Harvesting: Block boundaries are established with orange flagging, orange tags, and falling corners. Boundary trees may be harvested when they are adjacent to an existing road or block. All other boundary trees should not be felled or damaged.

Retention trees are painted with an orange "L"' and flagged with orange falling boundary ribbon. Leave trees may be felled for safety reasons but alternative trees of the same diameter and species must be retained in their place.

This block will be regenerated using a retention silvicultural system with external wildlife tree retention. The block is designed for ground based harvesting. Road access is off Friesen Main.

Temporary Roads: Spur F4-2 and F4-3 are temporary road structures. They are to be permanently deactivated and replanted after completion of harvesting operations.

Windthrow: A windthrow assessment was completed by K2 Forestry Services on June 16, 2015. Block F4 has been assessed as having a moderate to low windthrow risk. No treatments required. See windthrow assessment for further details.

Terrain Stability: It was determined that a terrain stability assessment was not required, this was based on the following rationale:

- Slopes are less than 60% and average15% within the block;
- No current or previous signs of instability;
- Roads are already constructed and stable

Recreation Anticipate high public traffic in the surrounding areas as these roads are high use by Quads, recreational users and hunters. Adequate signs are to be posted to inform the public user groups of active blasting, logging and hauling during operations. Friesen Main will need to be closed to the public during these activities.

Root Rot: One root rot center was discovered between FC 19 and 20. Additional endemic spot infections may exist but no treatment is prescribed.

Coarse Woody Debris: Retain a minimum of 4 logs/ha each being at least 5m in length and 30 cm in diameter at one end.

Wildlife Tree Retention Areas: WTRA totaling 3.3 ha has been designated for F4. This is equivalent to 12.9% of the total area under prescription (TAUP).

Invasive Plants: Broom occurs along sections of the highway and hauling roads on route to F4. Monitor and treat broom and other invasive species during early establishment. Grass seed exposed soil on or adjacent to roads, trails, and landing sites as soon as possible following harvest.

Natural Range Barriers: Natural range barriers do not apply to the proposed harvest area.

Brush Competition: Expect moderate to heavy brush competition from bracken fern and alder ingress. Monitor and treat brush as required to establish new stand of conifers.

Regeneration: Plant promptly following harvesting to minimize the potential need for future brushing treatments. Focus Cw on water receiving sites.

CUTBLOCK AND ROAD SITE PLAN

Recommended Planting Prescription:

SU	NAR (ha)	Species	Percent (%)	Stock Type	Stems/ha	Total Stems
A	20.34	Fd Cw	90 10	412 or Larger	1080 120	19770 4638
A more detailed planting prescription is to be completed during the Post-Harvest Assessment.						

RIPARIAN MANAGEMENT					
Riparian Class of Feature	S4 S4 S4 S3 S2	Designation on Map	Str. 1 Str. 2 Str. 3 (R1) Str. 3 (R2) Clutesi Creek	Falling and/or Skidding or Yarding Across a Stream	Yes No No No No

Stream 1, 2 and 3 are small S4 streams, non-fish bearing and ephemeral. The substrate is rocky and the streams are dry the majority of the time. They are prescribed fall away yard away. Stream 1 has designated crossings to allow yarding of timber across the stream. Harvesting operations must minimize sedimentation into these creeks.

Retain cedar and non-merchantable stems within the RMZ where operationally practicable.

CUTBLOCK AND ROAD SITE PLAN

RPF SIGNATURE AND SEAL		
Prepared By:	George Knoll Name (Printed)	 Digitally signed by George Knoll Date: 2015.06.16 14:28:38 -07'00'
Signing RPF:	George Knoll RPF Name (Printed)	
16/07/15 Date Signed (dd/mm/yy)	4582 RPF Number	RPF Signature and Seal

"I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work."

SITE DEGRADATION ESTIMATE

A: DESCRIPTION OF AREA

TENURE	CP	BLOCK	Ha
AVCF	08	F4	25.47

B: Natural Non-Productive

Type	Ha
CREEK	0.00
SWAMPS	0.00
SLIDES	0.00
ROCK OPENINGS	0.00
OTHER / RESERVES	3.62
	Total NNP 3.62

C: UNNATURAL NON-PRODUCTIVE (before Rehab.)

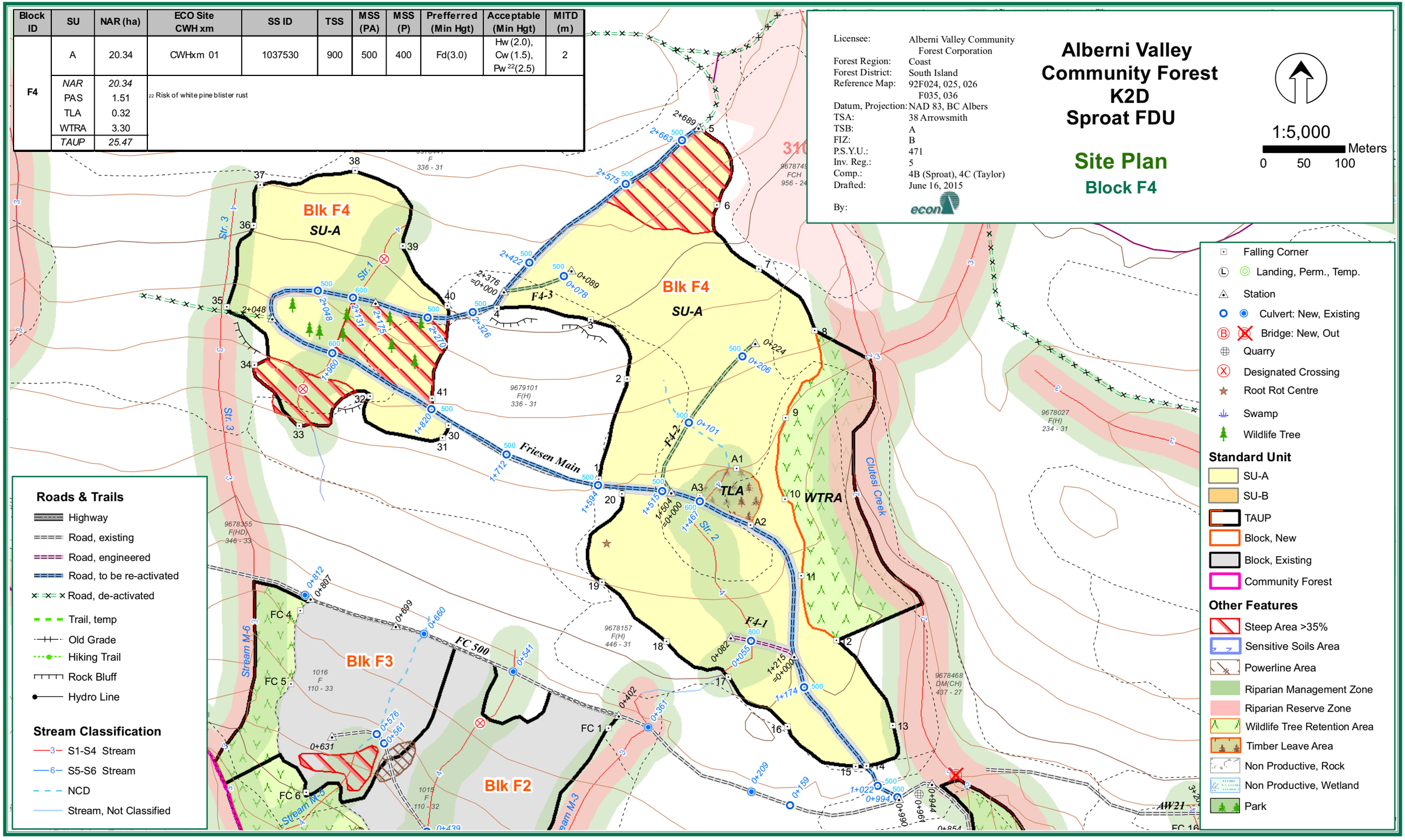
Type	START	END	AMOUNT	LENGTH (M)	SLOPE	WIDTH (M)	Ha	%
Friesen Main	1052	1564		512	8	12	0.610	
	1564	1594		30	10	6	0.018	
	1790	1820		30	10	6	0.018	
	1820	2295		475	10	12	0.570	
	2351	2689		338	10	6	0.202	
Spur F4-1	0	82		82	5	12	0.098	
Spur F4-2	0	224		224	22	12	0.027	
Spur F4-3	0	89		89	5	12	0.107	
Totals							1.65	6.5%

D: SUMMARY

TYPE	Ha	%
GROSS AREA	25.47	100
NATURAL NON-PRODUCTIVE AREA	3.62	14%
UNNATURAL NON-PRODUCTIVE AREA	1.65	6.5%
REHABILITATION AREA	0.14	0.005%
NET AREA TO BE REFORESTED	20.34	79.8%

E: COMMENTS:

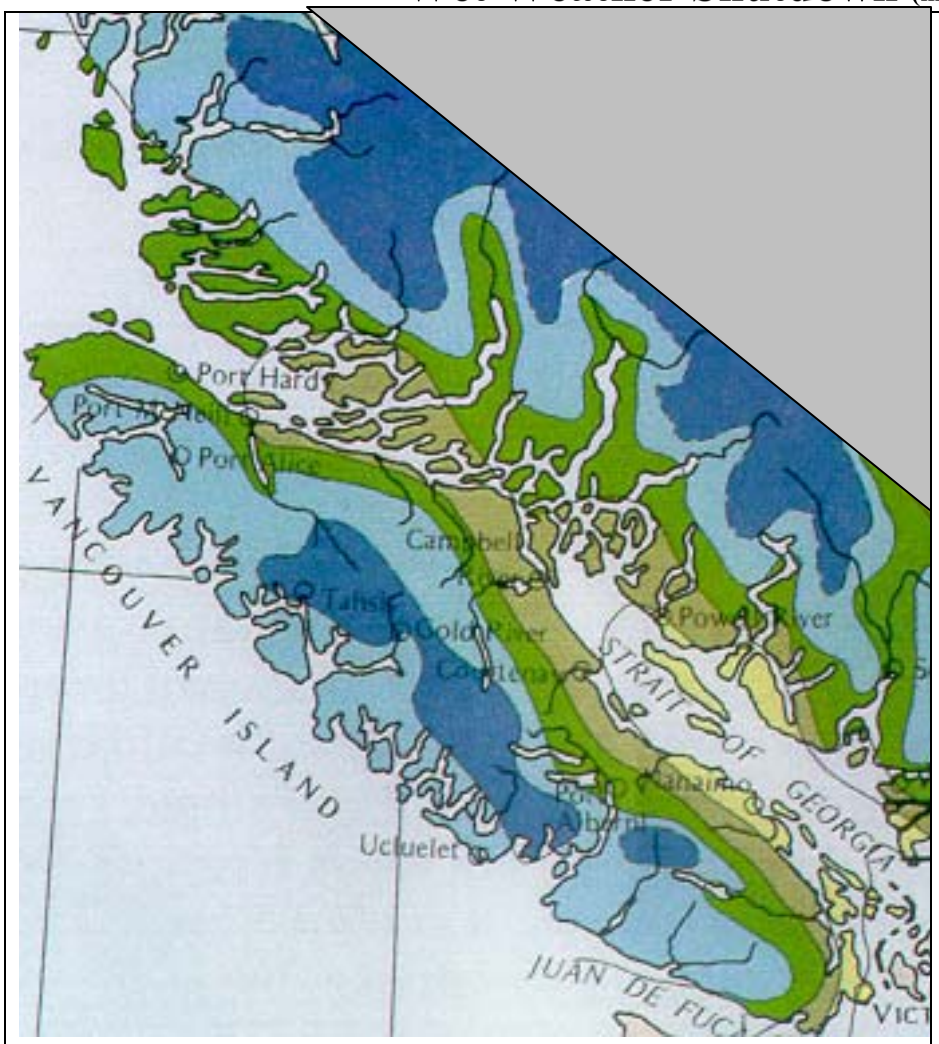
PREPARED BY: G.Knoll, RPF **DATE:** June 16, 2015


Block ID | SU | NAR (ha) | ECO Site CWH xm | SS ID | TSS | MSS (PA) | MSS (P) | Prefferred (Min Hgt) | Acceptable (Min Hgt) | MITD (m)
F4 | A | 20.34 | CWHxm 01 | 1037530 | 900 | 500 | 400 | Fd(3.0) | Hw (2.0), Cw (1.5), Pw 22(2.5) | 2
NAR 20.34
PAS 1.51
TLA 0.32
WTRA 3.30
TAUP 25.47
22 Risk of white pine blister rust
Licensee: Alberni Valley Community Forest Corporation
Forest Region: Coast
Forest District: South Island
Reference Map: 92F024, 025, 026 F035, 036
Datum, Projection: NAD 83, BC Albers
TSA: 38 Arrowsmith
TSB: A
FIZ: B
P.S.Y.U.: 471
Inv. Reg.: 5
Comp.: 4B (Sproat), 4C (Taylor)
Drafted: June 16, 2015
By: econ
Alberni Valley Community Forest
K2D
Sproat FDU
Site Plan
Block F4
1:5,000
Meters
0 50 100
Blk F4
SU-A
Blk F3
Blk F2
F4-1
F4-2
F4-3
Friesen Main
FC 500
Clutesi Creek
TLA
WTRA
Roads & Trails
Highway
Road, existing
Road, engineered
Road, to be re-activated
Road, de-activated
Trail, temp
Old Grade
Hiking Trail
Rock Bluff
Hydro Line
Stream Classification
S1-S4 Stream
S5-S6 Stream
NCD
Stream, Not Classified
Falling Corner
Landing, Perm., Temp.
Station
Culvert: New, Existing
Bridge: New, Out
Quarry
Designated Crossing
Root Rot Centre
Swamp
Wildlife Tree
Standard Unit
SU-A
SU-B
TAUP
Block, New
Block, Existing
Community Forest
Other Features
Steep Area >35%
Sensitive Soils Area
Powerline Area
Riparian Management Zone
Riparian Reserve Zone
Wildlife Tree Retention Area
Timber Leave Area
Non Productive, Rock
Non Productive, Wetland
Park

Appendix 6: Wet Weather Shutdown Guidelines

Wet Weather Shutdown (modified Nov 7, 2006)

BCTS
BC Timber Sales
Strait of Georgia



Zone	Mean Annual Precip (mm)	Shutdown Threshold (mm/24 hours)
1	750	20
2	1500	40
3	2500	60
4	3000	75
5	3500	90

TABLE B Local Soil Type	Multiplier Factor
Very Erodible (e.g. lacustrine)	0.4
Erodible (e.g. organics, sands)	0.6
Least Erodible (e.g. colluvium, till)	0.8
Bedrock	1.0

TABLE C Slope Modifier	Multiplier Factor
0% - 57	1.0
57% - 70%	0.9
71% - 88%	0.8
89% +	0.7

Instructions:

1) Use base shutdown threshold from Table A
2) Multiply by Soil Type Modifier from Table B
3) Multiply result by Slope Modifier from Table C

Result is rainfall shutdown threshold in millimeters in a 24 hour period

Example

Zone¤	Table·A:·Mean·Annual·¤ Precipitation·(mm)¤	Shutdown· Threshold¤ (mm/24·hours)¤
1¤	750¤	20¤
2¤	1500¤	40¤
3¤	2500¤	60¤
4¤	3000¤	75¤
5¤	3500¤	90¤

TABLE·B·Local·Soil·Type¤	Multiplier¤ Factor¤
Very·Erodible·(e.g.· lacustrine)¤	0.4¤
Erodible·(e.g.·organics,· sands)¤	0.6¤
Least·Erodible·(e.g.· colluvium,·till)¤	0.8¤
Bedrock¤	1.0¤

TABLE·C·Slope·Modifier¤	Multiplier¤ Factor¤
0%·-·57¤	1.0¤
·57%·-·70%¤	0.9¤
71%·-·88%¤	0.8¤
89%·+¤	0.7¤

For Dark Blue Zone 5; 24 Hr Shutdown Criteria = 90 x 0.8 x 0.8 = 58 mm

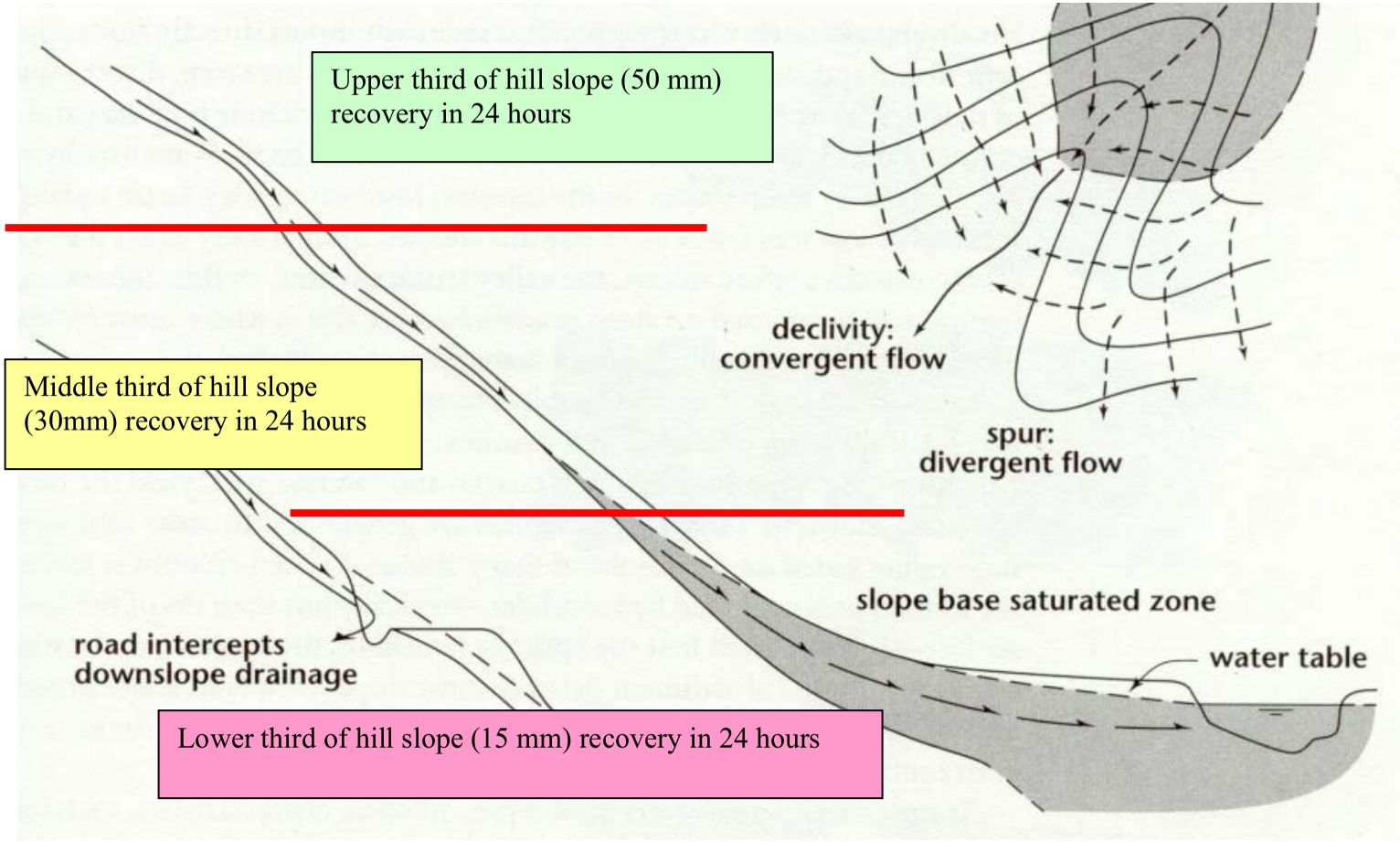
Return to Work Estimation Guide

Water balance returns to normal after a heavy rainfall period subject to a number of variables

- -slope position
- -slope gradient
- -soil type and depth (or proximity to bedrock)

Where a road is located above the worksite, interception by ditch lines may have the effect of increasing the recovery rate for lower slope positions

Using the following sketch as a guide, identify the slope position of the planned activity (upper, middle and lower thirds)
In an **average** situation precipitation input is reduced in a 24 hour period by the indicated values based on slope position



Appendix 7: Best Management Practices for a Community Watershed

(Practices Derived from Econ Forest Consulting Roads Report June 2011 and Sproat Lake CWAP Report 2008)

Best Management Practices for Community Watersheds

Refer also to Section 5.2.4 of the AVCF FSP.

Ditch Cleaning: where needed, ditches are to be cleaned when conditions are dry. Ditch spoil is not to be windrowed along the road shoulder. On moderate slopes, the ditch spoil could be thinly spread on the slope below the road, but not heaped or piled against trees. Where the road is on steep slopes, the ditch spoil should be end hauled to a suitable spoil site.

Culvert replacement: Where required culvert replacements are to be done during dry weather (except for emergency repairs or replacements). The inlet and outlet areas on new culverts, and the adjacent fill slopes, are to be armoured to prevent erosion or sloughing into the creek.

Rock Ballasting of road surface: For new road construction, where the road is close to a stream channel, the road surface is to be ballasted with clean rock. The road surface is also to be rock ballasted for 30 meters either side of stream culverts.

Road grading practices: grading is to be avoided during heavy rain.

Shutdown or harvest completion: In preparation for a shutdown for a period longer than 30 days or at a harvest completion, the following measures will be taken:

> No excavated or end hauled material will be left piled in such a way as to become unstable during the shutdown period. Spoil sites, piles and fills will be sloped uniformly to prevent instability.
>
> Ditches and culverts will be left clear and functional, with adequate inlet basins to minimize the potential for plugging.
>
> On sections of steep grades, cross ditches and back-up swales will be constructed where needed to minimize ditch erosion.
>
> If road construction has reached a drainage course but a drainage structure has not been installed prior to shutdown, the drainage course will be left open and unimpeded.
>
> Where exposed silty soils could erode and enter surface streams or ditches connected to streams, silt fences, hay bales or erosion blankets will be applied as needed for temporary protection.

Appendix 8: Cruise Report

AVCF

K2D - CP# PRE

Block #: F4

SUMMARY OF VOLUMES (CGNF)
FULL VOLUMES APPLIED

16-Jun-2015 06:47:00PM

Cruised by: F WARREN AND ASSOCIATES LTD
Compiled by: F Warren and Associates Ltd

IFS

Map Area Statement Report

Average Line Method	Grades: Cruiser Called Alpha	FIZ: B	16-Jun-2015 06:47:00PM
AVCF	Cruiser Est Decay	PSYU: Nootka	Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE	Cruiser Est Waste	Region: 2 - West Coast	Compiled by: F Warren and Associates Ltd
Project: F4_K2D	CGNF Breakage Table	District: 04 - South Island	Cruised by: F WARREN AND ASSOCIATES LTD
			Version: 2014.00 IFS build 5885

Card A Cruise Identity

Licence #	: K2D	Cutting Permit #	: PRE
Number of Blocks	: 1	Forest Region	: West Coast
Forest District	: South Island	Type	: PSYU
Unit No	: Nootka	Tenure	: Community Forest Agreement
Quota	: Prop./Mngd.PSYU,TFL,or SSA	Sale Type	: None
Elevation	: 1	Co-ordinates Zone	: Unknown
East	: 0	North	: 0
Total Merch Area	: 20.40	Report Type	: *** FOR MPS PURPOSES ***
Locality	:		

Card B Compilation Standard

Damage	: Damage	Selective	: Compile All Trees
Double Sampling	: Measure Plots Only	Special Compilation	: No Special Compilation
Species Compilation	: Exceptions Not Used	Type of Compilation	: Coastal

Compilation Standard	Mature	Immature
DBH Limit	17.50	12.00
Stump Height	30	30
Top Diameter	15.00	10.00

Card C Type Description

		Silvicultural Treatment Units
Type	Description	A
1		6.4
2		14.0

Card D Block Description

				Silvicultural Treatment Units
Block	Description	Maturity	Type	A
0F4	F4	I	1	6.4
			2	14.0

Card F Harvesting Description

Harvest Method	Harvest Description		Silvicultural Treatment Units	
		Type	A	
SC	Ground Systems - Clearcut	1	6.4	
		2	14.0	

Card G Treatment Unit Description

Treatment Unit	Description
A	A

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Appraisal Summary Report

16-Jun-2015 06:47:00PM

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | Filename: F4_CGNF.ccp
AVCF | Cruiser Est Decay | PSYU: Nootka | Compiled by: F Warren and Associates Ltd
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Cruised by: F WARREN AND ASSOCIATES LTD
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Version: 2014.00 IFS build 5885
Location : | No Of Blocks : 1

Utilization Levels:	Minimum DBH	Top Diameter	Stump Height
Mature Blocks: (cm)	17.5	15.0	30
Immature Blocks:(cm)	12.0	10.0	30

Standard Log Length:(m) 13.00

Net Area: [All Treatment Units : 20.4]

All Method Summary

Cruiser Call Variable Length Grades %

Species Code	Description	H	I	J	U	Y	Net Volume (m3) All	Net Volume (m3) Live	Net Volume (m3) DP	Net Volume / ha All	Net Volume / ha Live	Net Volume / ha DP
CE	Cedar			27	69	4	550	550	0	26.947	26.947	0.000
FI	Doug-Fir	8	3	67	21	1	8045	8045	0	394.348	394.348	0.000
MA	Maple				88	12	239	239	0	11.714	11.714	0.000
	Total						8833	8833	0	433.010	433.010	0.000

Harvesting Method Summaries

Harvest Method	Net Volume	Net Vol /10m Log	Net Vol /Hectare	Hem+ Bal%	Partial Cut%	Slope%	Down Tree%	Heavy Fire%
SC	8833	0.40	433.010	0		31	0	0
Conventional Methods	8833	0.40	433.010	0		31	0	0
All Methods	8833	0.40	433.010	0			0	0

Cutting Authority

95% Confidence Interval	18.8
Plots/Ha	0.8
Cruised Trees/Plot	4.1
Net 2nd Growth-Conifer %	100.0
Net 2nd Growth-Conifer (m3)	8594
Net Immature by Block %	0F4: 97%
Non Heli Select Conifer (m3/ha)	421.30
Heli Select Total (decimal)	0.00
Heli+Skyline Total (decimal)	0.00
Piece Size - Conifer (m3/10m log)	0.41
Cruise Date (yy-mm):	15-06

Plots: 17 # <= 5yrs: 17 # > 5yrs: 0 # > 10yrs: 0 # no date: 0

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Volume Statistical Analysis

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Utilization Levels:	Minimum DBH	Top Diameter	Stump Height
Mature Blocks: (cm)	17.5	15.0	30
Immature Blocks:(cm)	12.0	10.0	30

Standard Log Length:(m) 13.00

Forest Type	Plots Cnt	Plots Mea	Plots Tot	Area ha	Net Volume m3/ha	Proportional Volume	Trees Cnt	Trees Mea	Trees Tot	Standard Deviation	Coeff. of Variation	Sampling Error 1 SE%	Sampling Error 2 SE%
1 :	0	6	6	6.4	536.7	0.39	0	29	29	182.1579	33.9	13.9	35.6
2 :	0	11	11	14.0	385.6	0.61	0	40	40	145.7786	37.8	11.4	25.4
TOTAL	0	17	17	20.4	433.0		0	69	69		36.3	8.8	18.8

Number of live & dead potential trees sampled is 69
Number of dead useless trees sampled is 0
Number of live useless trees sampled is 0

The weighted sampling error is 18.8% at the 95% confidence level

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Basal Area Statistical Analysis

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Utilization Levels:	Minimum DBH	Top Diameter	Stump Height
Mature Blocks: (cm)	17.5	15.0	30
Immature Blocks:(cm)	12.0	10.0	30

Standard Log Length:(m) 13.00

Forest Type	Plots Cnt	Plots Mea	Plots Tot	Area ha	Basal Area m2/ha	Proportional Basal Area	Trees Cnt	Trees Mea	Trees Tot	Standard Deviation	Coeff. of Variation	Sampling Error 1 SE%	Sampling Error 2 SE%
1 :	0	6	6	6.4	58.0	0.38	0	29	29	20.6688	35.6	14.5	37.4
2 :	0	11	11	14.0	43.6	0.62	0	40	40	14.4725	33.2	10.0	22.3
TOTAL	0	17	17	20.4	48.1		0	69	69		34.2	8.3	17.7

Number of live & dead potential trees sampled is 69
Number of dead useless trees sampled is 0
Number of live useless trees sampled is 0

The weighted sampling error is 17.7% at the 95% confidence level

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

All Method Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

[All Treatment Units : 20.4]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH cm (I)					12.0	12.0	12.0
Stump Ht cm (I)					30.0	30.0	30.0
Top Dia cm (I)					10.0	10.0	10.0
Log Len m					13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	9070	8789	281	8217	572	281
Net Merchantable	m3	8833	8594	239	8045	550	239
Net Merch - All	m3/ha	433.010	421.296	11.714	394.348	26.947	11.714
Net Merch - Live	m3/ha	433.010	421.296	11.714	394.348	26.947	11.714
Net Merch - DP	m3/ha						
Decay	%	0	0		0	2	
Waste(billing)	%	0	0	12	0		12
Total Cull (DWB)	%	3	2	15	2	4	15
Net Merch Vol/Tree	m3	0.66	0.66	0.53	0.75	0.24	0.53
Avg 13.0 m Log Net	m3	0.40	0.41	0.28	0.43	0.25	0.28
Useless Dead/Living	%						
Net Second Growth	%		100.0		100.0	100.0	
All Burn Volume	%						
Heavy Fire Volume	%						
Blowdown Volume	%						
Insect Volume	%						

Cruiser Call Variable Length Grades %

#2 Sawlog	H	7	7		8		
#3 Sawlog	I	3	3		3		
#4 Sawlog	J	62	65		67	27	
#5 Utility	U	26	24	88	21	69	88
#7 Chipper	Y	2	1	12	1	4	12

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Harvest Method Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Harvest Method : SC - Ground Systems - Clearcut[All Treatment Units : 20.4]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH cm (I)					12.0	12.0	12.0
Stump Ht cm (I)					30.0	30.0	30.0
Top Dia cm (I)					10.0	10.0	10.0
Log Len m					13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	9070	8789	281	8217	572	281
Net Merchantable	m3	8833	8594	239	8045	550	239
Net Merch - All	m3/ha	433.010	421.296	11.714	394.348	26.947	11.714
Net Merch - Live	m3/ha	433.010	421.296	11.714	394.348	26.947	11.714
Net Merch - DP	m3/ha						
Decay	%	0	0		0	2	
Waste(billing)	%	0	0	12	0		12
Total Cull (DWB)	%	3	2	15	2	4	15
Net Merch Vol/Tree	m3	0.66	0.66	0.53	0.75	0.24	0.53
Avg 13.0 m Log Net	m3	0.40	0.41	0.28	0.43	0.25	0.28
Useless Dead/Living	%						
Net Second Growth	%		100.0		100.0	100.0	
All Burn Volume	%						
Heavy Fire Volume	%						
Blowdown Volume	%						
Insect Volume	%						
% Average Slope		31					
Cruiser Call Variable Length Grades %							
#2 Sawlog	H	7	7		8		
#3 Sawlog	I	3	3		3		
#4 Sawlog	J	62	65		67	27	
#5 Utility	U	26	24	88	21	69	88
#7 Chipper	Y	2	1	12	1	4	12

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Net Area: [A : 20.4]
Gross Area: [Grand Total : 20.4]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH cm (I)					12.0	12.0	12.0
Stump Ht cm (I)					30.0	30.0	30.0
Top Dia cm (I)					10.0	10.0	10.0
Log Len m					13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	9070	8789	281	8217	572	281
Net Merchantable	m3	8833	8594	239	8045	550	239
Net Merch - All	m3/ha	433	421	12	394	27	12
Distribution	%	100	97	3	91	6	3
Decay	%	0	0		0	2	
Waste	%	0	0	10	0		10
Waste(billing)	%	0	0	12	0		12
Breakage	%	2	2	5	2	2	5
Total Cull (DWB)	%	3	2	15	2	4	15
Stems/Ha (Live & DP)		656.5	634.3	22.2	523.8	110.5	22.2
Avg DBH (Live & DP)	cm	30.6	30.6	28.1	32.1	22.7	28.1
Snags/Ha							
Avg Snag DBH	cm						
Gross Merch Vol/Tree	m3	0.68	0.68	0.62	0.77	0.25	0.62
Net Merch Vol/Tree	m3	0.66	0.66	0.53	0.75	0.24	0.53
Avg Weight Total Ht	m	29.6	29.6	29.7	30.5	17.2	29.7
Avg Weight Merch Ht	m	24.5	24.6	22.0	25.5	11.7	22.0
Avg 13.0 m Log Net	m3	0.40	0.41	0.28	0.43	0.25	0.28
Avg 13.0 m Log Gross	m3	0.41	0.41	0.31	0.43	0.25	0.31
Avg # of 13.0 m Logs/Tree		1.67	1.65	2.00	1.79	1.00	2.00
Net Immature	%	97.3	100.0		100.0	100.0	
Net 2nd Growth	%		100.0				
Average Slope	%	31					
Cruiser Call Variable Length Grades %							
#2 Sawlog	H	7	7		8		
#3 Sawlog	I	3	3		3		
#4 Sawlog	J	62	65		67	27	
#5 Utility	U	26	24	88	21	69	88
#7 Chipper	Y	2	1	12	1	4	12
Statistical Summary							
Coeff. of Variation	%	36.3	39.1	304.5	43.5	235.8	304.5
Two Standard Error	%	18.8	20.2	157.4	22.5	121.9	157.4
Number and Type of Plots		MP = 17					
Number of Potential Trees		69					
Plots/Ha		0.8					
Cruised Trees/Plot		4.1					

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Net Area: Block : (I) - 0F4:F4, Plots in Block: 17, TUs: [A : 20.4]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH cm (I)					12.0	12.0	12.0
Stump Ht cm (I)					30.0	30.0	30.0
Top Dia cm (I)					10.0	10.0	10.0
Log Len m					13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	9070	8789	281	8217	572	281
Net Merchantable	m3	8833	8594	239	8045	550	239
Net Merch - All	m3/ha	433	421	12	394	27	12
Distribution	%	100	97	3	91	6	3
Decay	%	0	0		0	2	
Waste	%	0	0	10	0		10
Waste(billing)	%	0	0	12	0		12
Breakage	%	2	2	5	2	2	5
Total Cull (DWB)	%	3	2	15	2	4	15
Stems/Ha (Live & DP)		656.5	634.3	22.2	523.8	110.5	22.2
Avg DBH (Live & DP)	cm	30.6	30.6	28.1	32.1	22.7	28.1
Snags/Ha							
Avg Snag DBH	cm						
Gross Merch Vol/Tree	m3	0.68	0.68	0.62	0.77	0.25	0.62
Net Merch Vol/Tree	m3	0.66	0.66	0.53	0.75	0.24	0.53
Avg Weight Total Ht	m	29.6	29.6	29.7	30.5	17.2	29.7
Avg Weight Merch Ht	m	24.5	24.6	22.0	25.5	11.7	22.0
Avg 13.0 m Log Net	m3	0.40	0.41	0.28	0.43	0.25	0.28
Avg 13.0 m Log Gross	m3	0.41	0.41	0.31	0.43	0.25	0.31
Avg # of 13.0 m Logs/Tree		1.67	1.65	2.00	1.79	1.00	2.00
Net Immature	%	97.3	100.0		100.0	100.0	
Net 2nd Growth	%		100.0				
Average Slope	%	31					
Cruiser Call Variable Length Grades %							
#2 Sawlog	H	7	7		8		
#3 Sawlog	I	3	3		3		
#4 Sawlog	J	62	65		67	27	
#5 Utility	U	26	24	88	21	69	88
#7 Chipper	Y	2	1	12	1	4	12
Statistical Summary							
Coeff. of Variation	%	36.3	39.1	304.5	43.5	235.8	304.5
Two Standard Error	%	18.8	20.2	157.4	22.5	121.9	157.4
Number and Type of Plots		MP = 17					
Number of Potential Trees		69					
Plots/Ha		0.8					
Cruised Trees/Plot		4.1					

Slope % Statistics

Min= 15, Max= 47, CV=29.3, Std Error of Mean=2.2, 2SE%=15.1

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Net Area: Type 1 (I):, Plots in Type: 6, TUs: [A : 6.4]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH cm (I)					12.0	12.0	12.0
Stump Ht cm (I)					30.0	30.0	30.0
Top Dia cm (I)					10.0	10.0	10.0
Log Len m					13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	3537	3429	109	3429		109
Net Merchantable	m3	3435	3352	83	3352		83
Net Merch - All	m3/ha	537	524	13	524		13
Distribution	%	100	98	2	98		2
Decay	%	0	0		0		
Waste	%	1	0	18	0		18
Waste(billing)	%	1	0	24	0		24
Breakage	%	2	2	5	2		5
Total Cull (DWB)	%	3	2	23	2		23
Stems/Ha (Live & DP)		790.1	740.7	49.4	740.7		49.4
Avg DBH (Live & DP)	cm	30.6	31.0	22.7	31.0		22.7
Snags/Ha							
Avg Snag DBH	cm						
Gross Merch Vol/Tree	m3	0.70	0.72	0.34	0.72		0.34
Net Merch Vol/Tree	m3	0.68	0.71	0.26	0.71		0.26
Avg Weight Total Ht	m	29.9	30.1	25.0	30.1		25.0
Avg Weight Merch Ht	m	24.6	24.8	16.3	24.8		16.3
Avg 13.0 m Log Net	m3	0.38	0.40	0.14	0.40		0.14
Avg 13.0 m Log Gross	m3	0.39	0.40	0.17	0.40		0.17
Avg # of 13.0 m Logs/Tree		1.81	1.79	2.00	1.79		2.00
Net Immature	%	97.6	100.0		100.0		
Net 2nd Growth	%		100.0				
Cruiser Call Variable Length Grades %							
#2 Sawlog	H	6	7		7		
#4 Sawlog	J	68	69		69		
#5 Utility	U	25	23	100	23		100
#7 Chipper	Y	1	1		1		
Statistical Summary							
Coeff. of Variation	%	33.9	33.2	244.9	33.2		244.9
Two Standard Error	%	35.6	34.9	257.1	34.9		257.1
Number and Type of Plots		MP = 6					
Number of Potential Trees		29					
Plots/Ha		0.9					
Cruised Trees/Plot		4.8					

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Net Area: Type 2 (I):, Plots in Type: 11, TUs: [A : 14.0]

		Total	Conifer	Decid	F	C	MB
Utilization Limits							
Min DBH	cm (I)				12.0	12.0	12.0
Stump Ht	cm (I)				30.0	30.0	30.0
Top Dia	cm (I)				10.0	10.0	10.0
Log Len	m				13.0	13.0	13.0
Volume and Size Data							
Gross Merchantable	m3	5533	5360	173	4788	572	173
Net Merchantable	m3	5398	5243	156	4693	550	156
Net Merch - All	m3/ha	386	374	11	335	39	11
Distribution	%	100	97	3	87	10	3
Decay	%	0	0			2	
Waste	%	0		5			5
Waste(billing)	%	0		5			5
Breakage	%	2	2	5	2	2	5
Total Cull (DWB)	%	2	2	10	2	4	10
Stems/Ha (Live & DP)		595.5	585.7	9.8	424.7	161.1	9.8
Avg DBH (Live & DP)	cm	30.5	30.4	37.7	32.9	22.7	37.7
Snags/Ha							
Avg Snag DBH	cm						
Gross Merch Vol/Tree	m3	0.66	0.65	1.26	0.81	0.25	1.26
Net Merch Vol/Tree	m3	0.65	0.64	1.14	0.79	0.24	1.14
Avg Weight Total Ht	m	29.3	29.2	32.8	30.8	17.2	32.8
Avg Weight Merch Ht	m	24.5	24.5	25.5	25.9	11.7	25.5
Avg 13.0 m Log Net	m3	0.42	0.41	0.60	0.45	0.25	0.60
Avg 13.0 m Log Gross	m3	0.42	0.42	0.63	0.45	0.25	0.63
Avg # of 13.0 m Logs/Tree		1.58	1.57	2.00	1.79	1.00	2.00
Net Immature	%	97.1	100.0		100.0	100.0	
Net 2nd Growth	%		100.0				

Cruiser Call Variable Length Grades %							
#2 Sawlog	H	8	8		9		
#3 Sawlog	I	4	4		5		
#4 Sawlog	J	60	62		66	27	
#5 Utility	U	26	25	82	19	69	82
#7 Chipper	Y	2	1	18	1	4	18
Statistical Summary							
Coeff. of Variation	%	37.8	42.8	331.7	50.6	189.7	331.7
Two Standard Error	%	25.4	28.8	222.8	34.0	127.4	222.8
Number and Type of Plots		MP = 11					
Number of Potential Trees		40					
Plots/Ha		0.8					
Cruised Trees/Plot		3.6					

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Stand Table (stems/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

[A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	42.9			42.9			
20	94.1	73.2		167.3			
25	120.4	16.5	15.5	152.4			
30	60.7	11.8		72.5			
35	80.6	9.0		89.6			
40	43.6		6.7	50.3			
45	47.9			47.9			
50	10.3			10.3			
55	11.8			11.8			
60	5.5			5.5			
65	2.2			2.2			
70	2.0			2.0			
75	1.8			1.8			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	523.8	110.5	22.2	656.5			
Dead P							
Dead U							
Live U							
	Average DBH(cm) at 5 Levels						
12.5 +	32.1	22.7	28.1	30.6			
17.5 +	33.2	22.7	28.1	31.4			
22.5 +	35.8	27.7	28.1	34.8			
27.5 +	39.9	30.3	37.7	39.3			
32.5 +	42.5	32.6	37.7	42.0			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Stock Table (m3/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

[A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	2.2			2.2			
20	17.5	13.5		31.0			
25	42.4	3.9	4.1	50.4			
30	37.4	4.9		42.3			
35	72.0	4.6		76.6			
40	53.6		7.6	61.3			
45	77.5			77.5			
50	21.3			21.3			
55	31.2			31.2			
60	14.2			14.2			
65	8.4			8.4			
70	8.1			8.1			
75	8.5			8.5			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	394.3	26.9	11.7	433.0			
Dead P							
			Total Volumes for 7 Levels				
17.5 +	392.1	26.9	11.7	430.8			
22.5 +	374.6	13.4	11.7	399.8			
27.5 +	332.2	9.5	7.6	349.3			
32.5 +	294.8	4.6	7.6	307.0			
37.5 +	222.8		7.6	230.4			
42.5 +	169.2			169.2			
47.5 +	91.6			91.6			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Basal Area Table (m2/ha)

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

[A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	0.7			0.7			
20	2.6	2.2		4.9			
25	5.5	0.7	0.6	6.9			
30	4.2	0.7		5.0			
35	7.6	0.7		8.4			
40	5.5		0.7	6.3			
45	7.5			7.5			
50	2.0			2.0			
55	2.8			2.8			
60	1.5			1.5			
65	0.7			0.7			
70	0.7			0.7			
75	0.7			0.7			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	42.3	4.5	1.4	48.1			
Dead P							
Dead U							
Live U							
	Average Basal Area (m2) at 5 Levels						
12.5 +	42.3	4.5	1.4	48.1			
17.5 +	41.5	4.5	1.4	47.4			
22.5 +	38.9	2.2	1.4	42.5			
27.5 +	33.4	1.5	0.7	35.6			
32.5 +	29.1	0.7	0.7	30.6			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Stand Table (stems/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Block : (I) - 0F4:F4, Plots in Block: 17, TUs: [A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	42.9			42.9			
20	94.1	73.2		167.3			
25	120.4	16.5	15.5	152.4			
30	60.7	11.8		72.5			
35	80.6	9.0		89.6			
40	43.6		6.7	50.3			
45	47.9			47.9			
50	10.3			10.3			
55	11.8			11.8			
60	5.5			5.5			
65	2.2			2.2			
70	2.0			2.0			
75	1.8			1.8			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	523.8	110.5	22.2	656.5			
Dead P							
Dead U							
Live U							
	Average DBH(cm) at 5 Levels						
12.5 +	32.1	22.7	28.1	30.6			
17.5 +	33.2	22.7	28.1	31.4			
22.5 +	35.8	27.7	28.1	34.8			
27.5 +	39.9	30.3	37.7	39.3			
32.5 +	42.5	32.6	37.7	42.0			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Stock Table (m3/ha)

16-Jun-2015 06:47:00PM

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | Filename: F4_CGNF.ccp
AVCF | Cruiser Est Decay | PSYU: Nootka | Compiled by: F Warren and Associates Ltd
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Cruised by: F WARREN AND ASSOCIATES LTD
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Version: 2014.00 IFS build 5885

Block : (I) - 0F4:F4, Plots in Block: 17, TUs: [A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	2.2			2.2			
20	17.5	13.5		31.0			
25	42.4	3.9	4.1	50.4			
30	37.4	4.9		42.3			
35	72.0	4.6		76.6			
40	53.6		7.6	61.3			
45	77.5			77.5			
50	21.3			21.3			
55	31.2			31.2			
60	14.2			14.2			
65	8.4			8.4			
70	8.1			8.1			
75	8.5			8.5			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	394.3	26.9	11.7	433.0			
Dead P							
	Total Volumes for 7 Levels						
17.5 +	392.1	26.9	11.7	430.8			
22.5 +	374.6	13.4	11.7	399.8			
27.5 +	332.2	9.5	7.6	349.3			
32.5 +	294.8	4.6	7.6	307.0			
37.5 +	222.8		7.6	230.4			
42.5 +	169.2			169.2			
47.5 +	91.6			91.6			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Basal Area Table (m2/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Block : (I) - 0F4:F4, Plots in Block: 17, TUs: [A : 20.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	0.7			0.7			
20	2.6	2.2		4.9			
25	5.5	0.7	0.6	6.9			
30	4.2	0.7		5.0			
35	7.6	0.7		8.4			
40	5.5		0.7	6.3			
45	7.5			7.5			
50	2.0			2.0			
55	2.8			2.8			
60	1.5			1.5			
65	0.7			0.7			
70	0.7			0.7			
75	0.7			0.7			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	42.3	4.5	1.4	48.1			
Dead P							
Dead U							
Live U							
	Average Basal Area (m2) at 5 Levels						
12.5 +	42.3	4.5	1.4	48.1			
17.5 +	41.5	4.5	1.4	47.4			
22.5 +	38.9	2.2	1.4	42.5			
27.5 +	33.4	1.5	0.7	35.6			
32.5 +	29.1	0.7	0.7	30.6			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stand Table (stems/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 1 (I):, Plots in Type: 6, TUs: [A : 6.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15							
20	216.6			216.6			
25	181.3		49.4	230.7			
30	52.9			52.9			
35	111.7			111.7			
40	62.8			62.8			
45	77.6			77.6			
50	20.7			20.7			
55	17.0			17.0			
60							
65							
70							
75							
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	740.7		49.4	790.1			
Dead P							
Dead U							
Live U							
	Average DBH(cm) at 5 Levels						
12.5 +	31.0		22.7	30.6			
17.5 +	31.0		22.7	30.6			
22.5 +	34.9		22.7	34.0			
27.5 +	39.5			39.5			
32.5 +	40.9			40.9			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stand Table (stems/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 2 (I):, Plots in Type: 11, TUs: [A : 14.0]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	62.6			62.6			
20	38.1	106.7		144.7			
25	92.5	24.1		116.7			
30	64.3	17.2		81.5			
35	66.4	13.1		79.4			
40	34.8		9.8	44.6			
45	34.3			34.3			
50	5.6			5.6			
55	9.4			9.4			
60	8.0			8.0			
65	3.2			3.2			
70	3.0			3.0			
75	2.6			2.6			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	424.7	161.1	9.8	595.5			
Dead P							
Dead U							
Live U							
	Average DBH(cm) at 5 Levels						
12.5 +	32.9	22.7	37.7	30.5			
17.5 +	35.0	22.7	37.7	31.9			
22.5 +	36.5	27.7	37.7	35.4			
27.5 +	40.3	30.3	37.7	39.2			
32.5 +	43.7	32.6	37.7	42.7			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stock Table (m3/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 1 (I):, Plots in Type: 6, TUs: [A : 6.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15							
20	40.0			40.0			
25	65.8		13.0	78.9			
30	37.8			37.8			
35	90.9			90.9			
40	80.5			80.5			
45	118.3			118.3			
50	45.2			45.2			
55	45.2			45.2			
60							
65							
70							
75							
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	523.7		13.0	536.7			
Dead P							
			Total Volumes for 7 Levels				
17.5 +	523.7		13.0	536.7			
22.5 +	483.7		13.0	496.7			
27.5 +	417.9			417.9			
32.5 +	380.1			380.1			
37.5 +	289.2			289.2			
42.5 +	208.7			208.7			
47.5 +	90.4			90.4			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stock Table (m3/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 2 (I):, Plots in Type: 11, TUs: [A : 14.0]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	3.3			3.3			
20	7.2	19.7		26.9			
25	31.8	5.7		37.5			
30	37.2	7.2		44.4			
35	63.4	6.7		70.1			
40	41.3		11.1	52.5			
45	58.9			58.9			
50	10.3			10.3			
55	24.8			24.8			
60	20.6			20.6			
65	12.3			12.3			
70	11.8			11.8			
75	12.4			12.4			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	335.2	39.3	11.1	385.6			
Dead P							
	Total Volumes for 7 Levels						
17.5 +	332.0	39.3	11.1	382.3			
22.5 +	324.8	19.6	11.1	355.4			
27.5 +	293.0	13.8	11.1	318.0			
32.5 +	255.8	6.7	11.1	273.6			
37.5 +	192.4		11.1	203.6			
42.5 +	151.1			151.1			
47.5 +	92.2			92.2			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Basal Area Table (m2/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 1 (I):, Plots in Type: 6, TUs: [A : 6.4]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15							
20	6.0			6.0			
25	8.0		2.0	10.0			
30	4.0			4.0			
35	10.0			10.0			
40	8.0			8.0			
45	12.0			12.0			
50	4.0			4.0			
55	4.0			4.0			
60							
65							
70							
75							
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	56.0		2.0	58.0			
Dead P							
Dead U							
Live U							
	Average Basal Area (m2) at 5 Levels						
12.5 +	56.0		2.0	58.0			
17.5 +	56.0		2.0	58.0			
22.5 +	50.0		2.0	52.0			
27.5 +	42.0			42.0			
32.5 +	38.0			38.0			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Basal Area Table (m2/ha)

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 16-Jun-2015 06:47:00PM
AVCF | Cruiser Est Decay | PSYU: Nootka | Filename: F4_CGNF.ccp
Licence Number: K2D CP: PRE | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: F4_K2D | CGNF Breakage Table | District: 04 - South Island | Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00 IFS build 5885

Type 2 (I):, Plots in Type: 11, TUs: [A : 14.0]

	F	C	MB	Total	DP	DU	LU
Utilization Limits							
Min DBH cm (I)	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Stump Ht cm (I)	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (I)	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class							
5							
10							
15	1.1			1.1			
20	1.1	3.3		4.4			
25	4.4	1.1		5.5			
30	4.4	1.1		5.5			
35	6.5	1.1		7.6			
40	4.4		1.1	5.5			
45	5.5			5.5			
50	1.1			1.1			
55	2.2			2.2			
60	2.2			2.2			
65	1.1			1.1			
70	1.1			1.1			
75	1.1			1.1			
80							
85							
90							
95							
100							
105							
110							
115							
120							
125							
130							
135							
140							
145							
150							
175							
200							
225							
250							
275							
Total	36.0	6.5	1.1	43.6			
Dead P							
Dead U							
Live U							
	Average Basal Area (m2) at 5 Levels						
12.5 +	36.0	6.5	1.1	43.6			
17.5 +	34.9	6.5	1.1	42.5			
22.5 +	33.8	3.3	1.1	38.2			
27.5 +	29.5	2.2	1.1	32.7			
32.5 +	25.1	1.1	1.1	27.3			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Summary

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Utilization Levels:	Minimum DBH	Top Diameter	Stump Height
Mature Blocks: (cm)	17.5	15.0	30
Immature Blocks:(cm)	12.0	10.0	30

Standard Log Length:(m) 13.00

Forest Type	Block	Strip	Plot #	Plot Size	Slope %	Species	# of Stems	Stems / Ha	Avg Diam	Gross Merch	Less Decay	Less DB	Less DWB	Cruise Date	Loss Ref No. YI	OI	M
1-	0F4		14	12.000F	34	Doug-Fir	4	300.59	45.09	492.51	492.51	482.72	482.72				
						All Sp.	4	300.59	45.09	492.51	492.51	482.72	482.72	1506			
			15	12.000F	35	Doug-Fir	7	1742.48	24.77	721.75	721.75	707.40	701.65				
						All Sp.	7	1742.48	24.77	721.75	721.75	707.40	701.65	1506			
			16	12.000F	37	Doug-Fir	5	572.82	36.52	594.64	594.64	582.82	582.82				
						Maple	1	296.51	22.70	101.94	101.94	96.85	78.22				
						All Sp.	6	869.33	32.47	696.59	696.59	679.66	661.04	1506			
			17	12.000F	36	Doug-Fir	5	874.54	29.56	558.42	555.83	544.73	544.73				
						All Sp.	5	874.54	29.56	558.42	555.83	544.73	544.73	1506			
			18	12.000F	40	Doug-Fir	2	215.18	37.68	206.26	206.26	202.16	202.16				
						All Sp.	2	215.18	37.68	206.26	206.26	202.16	202.16	1506			
			19	12.000F	47	Doug-Fir	5	738.40	32.17	640.77	640.77	628.03	628.03				
						All Sp.	5	738.40	32.17	640.77	640.77	628.03	628.03	1506			
2-	0F4		1	12.000F	34	Doug-Fir	1	28.83	72.80	138.72	138.72	135.97	135.97				
						Maple	1	107.50	37.70	135.60	135.60	128.82	122.20				
						All Sp.	2	136.33	47.34	274.33	274.33	264.79	258.17	1506			
			2	12.000F	22	W.R. Cedar	3	1173.22	19.77	225.59	221.39	216.87	216.87				
						Doug-Fir	1	34.97	66.10	137.77	137.77	135.03	135.03				
						All Sp.	4	1208.19	22.49	363.36	359.16	351.90	351.90	1506			
			3	12.000F	25	Doug-Fir	3	1013.24	21.27	211.81	211.81	207.60	207.60				
						All Sp.	3	1013.24	21.27	211.81	211.81	207.60	207.60	1506			
			4	12.000F	15	Doug-Fir	2	128.63	48.74	254.78	254.78	249.72	249.72				
						All Sp.	2	128.63	48.74	254.78	254.78	249.72	249.72	1506			
			6	12.000F	18	Doug-Fir	4	899.17	26.07	436.95	436.95	428.26	428.26				
						All Sp.	4	899.17	26.07	436.95	436.95	428.26	428.26	1506			
			7	12.000F	38	Doug-Fir	3	648.25	26.59	273.52	273.52	268.08	268.08				
						All Sp.	3	648.25	26.59	273.52	273.52	268.08	268.08	1506			
			8	12.000F	35	W.R. Cedar	2	454.69	25.92	147.10	144.37	141.42	141.42				
						Doug-Fir	3	388.91	34.33	337.07	337.07	330.37	330.37				
						All Sp.	5	843.60	30.09	484.17	481.43	471.78	471.78	1506			
			10	12.000F	19	W.R. Cedar	1	143.77	32.60	76.60	75.17	73.64	73.64				

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Summary

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Utilization Levels:	Minimum DBH	Top Diameter	Stump Height
Mature Blocks: (cm)	17.5	15.0	30
Immature Blocks:(cm)	12.0	10.0	30

Standard Log Length:(m) 13.00

Forest Type	Block	Strip	Plot #	Plot Size	Slope %	Species	# of Stems	Stems / Ha	Avg Diam	Gross Merch	Less Decay	Less DB	Less DWB	Cruise Date	Loss YI	Loss OI	Ref No. M
2-	0F4		10	12.000F	19	Doug-Fir	3	248.46	42.95	353.51	353.51	346.48	346.48				
						All Sp.	4	392.23	39.47	430.11	428.68	420.12	420.12	1506			
			11	12.000F	40	Doug-Fir	4	629.28	31.16	454.65	454.65	445.61	445.61				
						All Sp.	4	629.28	31.16	454.65	454.65	445.61	445.61	1506			
			12	12.000F	23	Doug-Fir	3	154.95	54.39	422.03	422.03	413.64	413.64				
						All Sp.	3	154.95	54.39	422.03	422.03	413.64	413.64	1506			
			13	12.000F	31	Doug-Fir	6	496.67	42.96	741.45	741.45	726.71	726.71				
						All Sp.	6	496.67	42.96	741.45	741.45	726.71	726.71	1506			

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Frequency Report

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Measure Plots

Blocks	Timber Type 1	2
BLOCK 0F4 (I)		
# of Plots	6	11
ha / Plot	1.07	1.27
Cutting Permit		
# of Plots	6	11
ha / Plot	1.07	1.27

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Frequency Report

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Measure Plots

Harvest Methods	Timber Type 1	2
METHOD SC		
# of Plots	6	11
ha / Plot	1.07	1.27
All Methods		
# of Plots	6	11
ha / Plot	1.07	1.27

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Frequency Report

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Count Plots

Blocks	Timber Type 1	2
BLOCK 0F4 (I)		
# of Plots		
ha / Plot		
Cutting Permit		
# of Plots		
ha / Plot		

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Frequency Report

Average Line Method
AVCF
Licence Number: K2D CP: PRE
Project: F4_K2D

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table

FIZ: B
PSYU: Nootka
Region: 2 - West Coast
District: 04 - South Island

16-Jun-2015 06:47:00PM
Filename: F4_CGNF.ccp
Compiled by: F Warren and Associates Ltd
Cruised by: F WARREN AND ASSOCIATES LTD
Version: 2014.00   IFS build 5885

Count Plots

Harvest Methods	Timber Type 1	Timber Type 2

METHOD SC
# of Plots
ha / Plot

All Methods
# of Plots
ha / Plot

FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,