Engineer Report

CP009

Cutblocks: TS2

Prepared By: Chris Law, RFT

Date: June 30, 2016

Contents

125°21'40"W 125°20'0"W 125°18'20"W 125°16'40"W 125°15'0"W

49°18'20"N

49°16'40"N

Driving Directions: (Approximate Distances)

From Port Alberni, take Hwy 4 West towards Tofino. Follow Hwy 4 for 46.4 km to South Taylor 228 on left . Follow South Taylor 228 for 930m to TA568 on Left. Continue along TA568 for 2.2km to block.

Doran Lake

Doran Main

Upper Taylor Main

Upper Taylor HU

TA550M

Taylor Main\ Hwy 4 Junction

TA550M14E

Taylor Rest Stop

South Taylor Main

TA550M14E1

Highway 4

South Taylor228

TA568

South Taylor228

TS2

Brigade Lake

ALBERNI VALLEY COMMUNITY FOREST

LOCATION MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 15 -Feb -2016

Scale: 1:20,000

N

Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

MAP LEGEND

Boundary Features:
- Falling Boundary
- Heli Splitline
- Adjacent Block-Planned
- Harvested
- Legal Boundary
- Pruning
- Feathering

Road Features:
- Travel Route
- Road
- Proposed Road
- Backspar Trail
- Recreation Trail
- Bridge
- Road Station (0+000)
- Existing Culvert
- New Culvert
- Culvert to be replaced

Natural Features:
- Windthrow
- Snag
- Swamp
- Slide
- Rock Bluff
- Karst Feature (K1)

Resource Features:
- Hazard
- Single Tree Retention
- Monumental Cedar
- Archaeological Feature/CMT
- Quarry/Gravel Pit
- Bear Den/Bird Nest
- Helipad/Service Landing
- Index Contour (200)
- Intermediate Contour

Riparian Features:
- Fish Streams (S1-S4) (S1)
- Non Fish streams (S5, S6) (S5)
- Unclassified Creek
- Non Classified Drainage
- Gully
- FSZ Stream
- Reach Break/Fish Barrier
- Stream ID (1)

Lakes/Wetlands:
- Lakes Class 1, 2, 3, 4 (L1)
- Wetlands Class 1, 2, 3, 4, 5 (W1)
- Community Watershed

Prepared By:

MERIDIAN Forest Services Ltd.
PO Box 275
#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

TS2 - TAYLOR MT. ADDER

Road Permit: R18553

Cutting Permit: 009

MAP 1 of 1

Due Diligence

Two falling corners and/or road stations must be referenced in the field with the release map on a continual basis before, and during the felling of any timber within this setting. If you are unsure of your location, Stop Work and call a supervisor.

Forest and Range Practices Act

How to follow plan:

1) Always read and understand your plans and maps.
2) Always match your plan and map to what you find on the ground and then check that you can do the work.
3) Stop and ask if you cannot follow the plan and map.
4) Know your responsibilities. Ask if you are unsure.

Due Dilligence means following these steps.

Timbermarking requirements:
All decked timber must be sufficiently marked (at least 10%) when the setting is inactive.

Safety Coordinates
Latitude: 49°16'33"N
Longitude: 125°19'57"W

Field Marking Standards:

Activity	Ribbon	Paint
Falling Boundary	FALLING BOUNDARY	
Internal Boundaries	FALLING BOUNDARY	
Reconnaissance Lines		
Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	
Management Zones (All)		
Reserve Trees (Painted)	L	

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

Falling & Yarding Release
Hauling can be conducted once Steep Grades have been assessed & deemed safe for hauling.

K2D 0R1

K2D 009

K2D

K2D

Hammermark for outside R/W only

TA 568B

TA568D

TA568E

TA568G

TA568H

TA568J

TS1

NAN_splk_11

HAZARD ALERT

1) There is windthrow dispersed throughout the cutblock with associated hazards such as, trees under tension, loose root wads and overhead hazards

Areas of Heavy Windthrow

2) A rock fall hazard has been identified and workers must be made aware of this.

3) Hauling Hazard - Steep road grades. Review the Steep Grade Assessment on the back of the release map for hauling limitations.

ALBERNI VALLEY COMMUNITY FOREST

HARVEST PLAN MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: C
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 06 -May -2016

Scale: 1:5,000
N
Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

See Instructions on reverse

MAP LEGEND

Boundary Features:
Falling Boundary
Heli Splitline
Adjacent Block-Planned
Harvested
Legal Boundary
Pruning
Feathering

Road Features:
Built Road
Deactivated Road
Proposed Road
Backspar Trail
Recreation Trail
Bridge
Road Station
Existing Culvert
New Culvert
Culvert to be replaced

Natural Features:
Windthrow
Snag
Swamp
Slide
Rock Bluff
Rock

Resource Features:
PSP
Single Tree Retention
Monumental Cedar
Archaeological Feature/CMT
Quarry/Gravel Pit
Bear Den/Bird Nest
Helipad/Service Landing
Index Contour
Intermediate Contour

Riparian Features:
Fish Streams (S1-S4)
Non Fish streams (S5, S6)
Unclassified Creek
Non Classified Drainage
Gully
FSZ Stream
Reach Break/Fish Barrier
Stream ID

Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5

Sensitive and Designated Areas:
Wildlife Tree Retention Area
Timber Leave Area
Legal OGMA

Harvest Methods:
Grapple
Hoe Forward
Hoechuck
Helicopter
Steep Hoechuck
Right-of-Way
Widening

Yarding Features:
Backspar Tree
Sensitive Soils
Heli Drop Zone
Steep Grade
Yarding Direction
Ridge/Yarding Break

Falling Type	Ha	Volume
Handfalling	10.0	12620
Mechanical	0.0	0
TOTAL	10.0	12620
CRUISE VOL/HA (m3)		1262
ENG VOL/HA (m3)		1262
HAUL DISTANCE		
Distance to Post Office Port Alberni		52.8 km
Travel Time from Port Alberni		80 min
Sproat Sort		50.0 km

HARVEST METHODS	Ha	Volume
System		
R/W	1.7	2145
O/RW	0.1	126
Hoe Chuck	0.0	0
Grapple	6.4	8077
Helicopter	1.8	2272
Skidder	0.0	0
Harvest Area	10.0	12620
Harvested Block	1.1	
R/W Removed	0.0	
WTRA	1.1	
TLA	1.2	
Gross Area	13.4	12620

VOLUME BY TIMBERMARK	Type	Ha	Vol
Timbermark			
K2D/009	CROWN	8.2	10349
K2D/0R1	CROWN	1.8	2271
TOTAL		10.0	12620
Field Work:	MFS		
Checked By:	AVCF		
AVCF CORP:		Date:	
CONTRACTOR:		Date:	

Species	%
Fd	38%
Hw	42%
Ba	13%
Cw	2%
Yc	5%
Pw	0%
Dr	0%
Total	100%
OG	100%
SG	0%

PROFESSIONAL SEAL AND SIGNATURE

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.

AVCF CORP: DATE:

Prepared By:
MERIDIAN Forest Services Ltd.
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#15-1010 Shearme Road
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www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

HARVESTING INSTUCTIONS – OPENING# TS2

ACCESS ROAD: TA568 CUTTING PERMIT: 009 TIMBERMARK: K2D/009

EMPLOYEE REQUIREMENTS

1) All employees, supervisors and contractors associated with this Logging Plan approval 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 the water quality.
2) All ditches and culverts **must** remain as free flowing as possible through all phases of harvesting.
3) Cutblock TS2 is within Rainfall Shutdown Area "**5**"
Shutdown Criteria: Activities must shut down if: The total rainfall reaches 72 mm 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 30 mm in 24 hours. Refer to the Return to work guide in the tender document for more information.

Foresty

1) Invasive Plants: Broom occurs along sections of TA568. 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. An information sharing process was done with the Hupacasath and Tsheshaht First Nations. 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 and Tseshaht First Nations are 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 and OGMA's have been established, and are marked on the 1:5000 map. Any danger trees felled within the WTP or OGMA 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 second growth 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 high to very high 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) 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

In-block safety hazards associated with block TS2 have been identified on the harvest 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

Road segments with gradients > 18% have been identified on the Harvest and Road instruction Plan Map en route to the setting. 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 K1 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 when hauling on the highway.

SPECIFIC BLOCK SAFETY COMMENTS

* Colluvium within the cutblock could roll during harvesting activities.
* Grades >18% are proposed within cutblock tsa and along the access route. Supervosors should complete a steep grade assessment prior to comensing hauling operations.
* Public hiking trails exist adjacent to this block. Proper signage and public awareness must be addressed during all phases of HARVESTING.

HARVESTING ISSUES

* This setting will be helicopter and cable yarded.
* Hand falling will be required for cutblock ts2.
* Utlize branch ta568, ta568j and ta568d for heli drop zones. Do not impact adjacent plantations.
* All persons working in this setting should be aware of steep ground, small rock outcrops, large boulders/ rock fall hazards, slope instability and sensitive areas within and adjacent to the falling boundary. All these areas are identified on the harvesting map. Note the rock fall hazards worker safety alert locations.
* Uniformly dispersed leave trees have been retained within the harvest areas as part of the **"legal requirements"** for cutblock's located within the sproat lake special management zone no. 17. As such, these trees have been selected and marked /identified with a blue panted "l" for leave tree. They are not to be cut or damaged during cutblock development.

E.1 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
3	S2	FA, YA, NX, NC
5	S3	FA, YA, NX, NC
		STREAM REACH OUTSIDE HARVEST AREA, PORTIONS OF THE RMA WITHIN THE HARVEST AREA
1	S4	FA, YA, NX, NC
6	S4	FA, YA, NX, NC
4 (R1)	S3	FA, YA, NX, NC
		PORTIONS OF STREAM REACH AND RMA ARE WITHIN THE HARVEST AREA
4 (R2), 4B, 4C	S4	FX, YX, NX, NC
	AC	Cleaning to be assessed post-yarding prior to block completion.
	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.
	FX	Fall Across.
	YX	Yard Across. Maximize deflection to minimize stream bank disturbance.
	YV	Yard vertically.
	MFZ	Machine free zone.
	MC	Machine Clean transportable introduced large woody debris (LWD) and accumulations concurrent with yarding.
	HC	Hand Clean introduced transportable debris.

Due Diligence

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How to follow plan:

1) Always read and understand your plans and maps.
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Safety Coordinates
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Internal Boundaries	FALLING BOUNDARY	
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Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	
Management Zones (All)		
Reserve Trees (Painted)	L	

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

Falling & Yarding Release
Hauling can be conducted once Steep Grades have been assessed & deemed safe for hauling.

K2D 0R1

K2D 009

K2D

K2D

Hammermark for outside R/W only

ALBERNI VALLEY COMMUNITY FOREST

ROAD CONSTRUCTION MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: B
Cascades: West C
Tenure: K2D
Geographic Coordinates:
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FSZ Stream
Reach Break/Fish Barrier
Stream ID

Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5

Sensitive and Designated Areas:
Wildlife Tree Retention Area
Scenic Area
Legal OGMA

Road Construction:
Steep Grade
Full Bench EndHaul
Full Bench Partial EndHaul
Spoil Site
RMA Infringement

Road Reactivation:
Case 1 - Brushing
Case 1 - Brush & Widening

Replace WBC w/600CMP
Sta. 1 = 2+209
0.5 x 2
Sta. 2 = 2+226
Sta. 2A = 2+251
Sta. 2B = 2+310
Sta. 2C = 2+339
Sta. 3 = 2+403
Sta. 3A = 2+485
Sta. 3C = 2+627
Sta. 4 = 2+663
Sta. 4A = 2+713
Sta. 5 = 2+794
Sta. 6 = 2+800
Sta. 7 = 2+811
Sta. 8 = 2+830
Sta. 9 = 2+840
Sta. 10 = 2+843
Sta. 11 = 2+903
Sta. 12 = 2+944
Sta. 13 = 2+997
Sta. 14 = 3+099 = 0+000
Widening for 10m
Replace Plugged 600CMP
Remove old WBC Structures
TA568G
TA568E
TA568H
TA568J
TS1
NAN_splk_11
NAN_splk_54

HAZARD ALERT

1) There is windthrow dispersed throughout the cutblock with associated hazards such as, trees under tension, loose root wads and overhead hazards

Areas of Heavy Windthrow

2) A rock fall hazard has been identified and workers must be made aware of this.

3) Hauling Hazard - Steep road grades. Review the Steep Grade Assessment on the back of the release map for hauling limitations.

RMA INFRINGEMENTS
TA568J
0+133 to 0+199
0+423 to 0+497
0+712 to 0+750
0+826 to 0+888

TIMBERMARK	Ha of R/W	VOLUME
K2D/OR1	1.8	2271
TOTAL	1.8	2271
CRUISE VOL/HA (m3)		1262
ENG VOL/HA (m3)		1262
HAUL DISTANCE		
Distance to Post Office Port Alberni		52.8 km
Travel Time from Port Alberni		80 min
Sproat Sort		50.0 km

CULVERTS		
SIZE	TYPE	NUMBER
600	CMP	13
800	CMP	1
1200	CMP	1
1X5	WBC	1
TOTAL		16

ROAD NAME	START	END	TOTAL
TA568J	0	888	888
TA568H	0	99	99
TA568G	0	63	63
TOTAL NEW ROAD			1050
TA568 - Case 1	2209	3099	890
TOTAL ROAD REHAB			890
Field Work:	MFS		
Checked By:	AVCF		
HFN FORESTRY:	PHASE	DATE	
CONTRACTOR:	PHASE	DATE	

SPECIES	%
Fd	38%
Hw	42%
Ba	13%
Cw	2%
Yc	5%
Pw	0%
Dr	0%
OG	100%
SG	0%

PROFESSIONAL SEAL AND SIGNATURE

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.

HFN Forestry DATE

Prepared By:
MERIDIAN Forest Services Ltd.
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#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

ROAD INSTRUCTIONS – OPENING#TS2

ACCESS ROAD: TA568 **CUTTING PERMIT: N0. 9** **TIMBERMARK: K2D/ 0R1**

RAINFALL SHUTDOWN CRITERIA

Cutblock TS2 is within Rainfall Shutdown Area "**5**"

Shutdown Criteria: Activities must shut down if: The total rainfall reaches 58 mm 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 30 mm in 24 hours. Refer to the Return to work guide in the tender document for more information.

Adequate recovery time should be given before building operations commence after a shutdown.

ROAD NAME	START STATION	END STATION	TYPE OF WORK/COMMENTS
TA568	2+209	3+099	Road Reactivation
TA568J	3+099=0+000	0+888	New Construction
TA568G	0+000	0+063	New Construction
TA568H	0+000	0+099	New Construction

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
TA568	2+213	-	-	-	600	X-Drain	OPENING TS2 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.
TA568	2+390	-	-	-	600	X-Drain	
TA568	2+650	-	-	-	600	X-Drain	
TA568	2+787	-			600	X-Drain	
TA568	2+827	-	S3	Low - Moderate	1200	Q-100	
TA568	2+890	-	S4	Low	800	Q-100	
TA568	2+931	5	S3	Moderate-High	1x5	Q-100	
TA568	2+984	-	-	-	600	X-Drain	
TA568J	0+091	4B	S4	Low	600	Q-100	
TA568J	0+289	4B	S4	Low	600	Q-100	
TA568J	0+561	-	-	-	600	X-Drain	
TA568J	0+637	4C	S4	Low	600	Q-100	
TA568J	0+703	-	-	-	600	X-Drain	
TA568J	0+794	-	-	-	600	X-Drain	
TA568G	0+009	-	-	-	600	X-Drain	
TA568H	0+064	-	-	-	600	X-Drain	

GENERAL INSTRUCTIONS

All employees, supervisors and contractors associated with these Harvest Instructions shall be fully advised of their contents and requirements.

All litter including cable, oil buckets, grease tubes, newspapers, and lunch garbage is to be placed in appropriate garbage containers and removed from the site for proper disposal concurrent with all operations.

ADDITIONAL INSTRUCTIONS

[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] Affected water licensees or affected water purveyors must be notified at least 48 hours before commencement of road construction, re-activation or deactivation in a community watershed.

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.

[6] 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.

[7] Cultural Resources: If an unidentified cultural heritage resource is encountered within the cutblock during any harvesting phase, operations will cease in the immediate vicinity of the feature and AVCF shall be notified immediately.

[8] Wildlife Resources: In the event any unidentified bear dens or raptor nest trees are encountered during falling, but before the tree has been cut, the faller will go elsewhere for the day and report this potential wildlife tree to a AVCF Supervisor. Fallers are not to return to the vicinity of the wildlife tree until notification from AVCF has been given. If the discovery of a bear den or potential nest tree occurs while the tree is being felled, the decision to proceed is at the faller's discretion in regards to safety and Worksafe BC requirements. If it is unsafe to leave the tree partially cut, the faller will complete falling the tree and report the incident to AVCF.

[9] Fish Streams: Due to the close proximity of fish streams immediately downstream of the cutblock, ensure a high level of diligence is maintained regarding stream bank protection, in-stream woody debris disturbance and protection of stream banks at designated crossings.

[10] Invasive Plants: Broom occurs along sections of TA568. 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.

FALLING of SNAGS and DANGER TREES

In accordance with the Cutting Permit Authority and WorkSafe 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 falling under 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.

EXCEPTION- Wildlife Tree Patch (WTP) areas and OLD Growth Management Areas (OGMAs) - Snags or danger trees can be felled within a WTP or OGMA for safety reasons although only the portion of the felled snag or danger tree that falls outside the WTP can be recovered.

CUTBLOCK BOUNDARY TREATMENTS

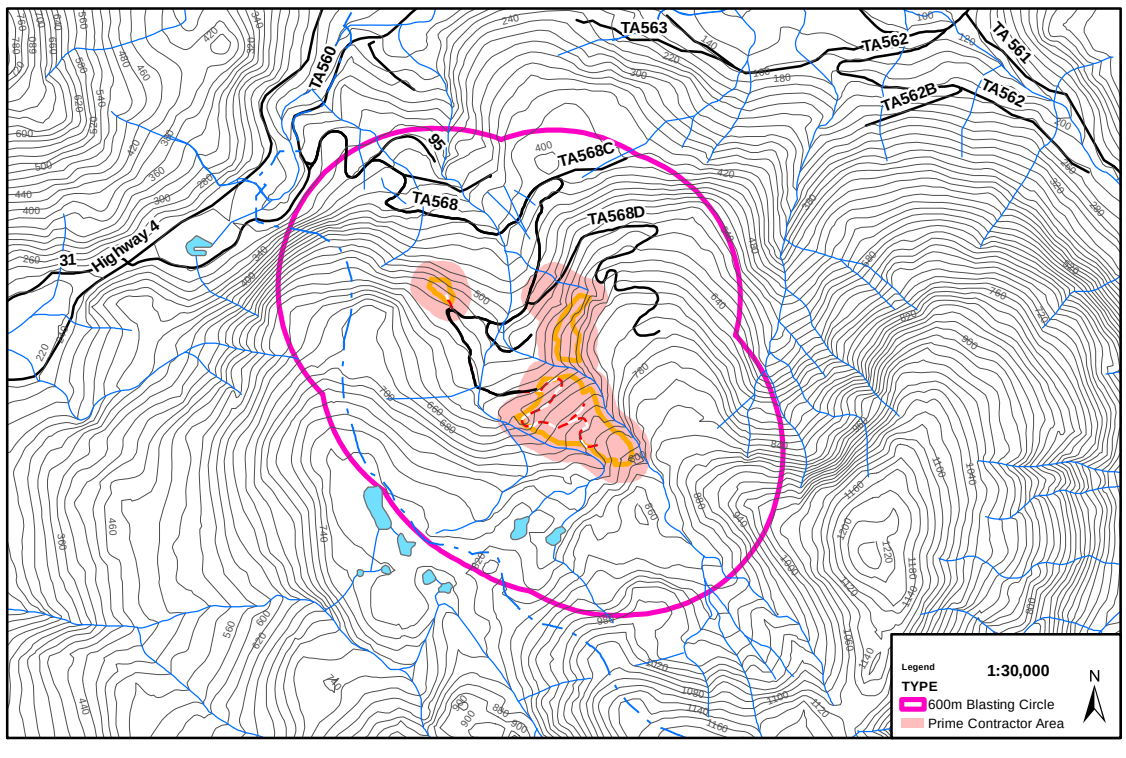
All marked boundary trees except snags and danger trees must remain standing during and after the completion of harvesting. Trees located along and adjacent to the cutblock edges (i.e. within the harvest boundary) that must be felled outside the harvest area must be recovered unless a physical, safety or environmental issue exists (e.g. deep gullies, steep breaks, fish creek, etc.). Trees that cannot be recovered may be left standing, if they are safe to leave, as wildlife trees. These trees must be recorded on a map and provided to AVCF once falling is complete; If unsure how to proceed, contact AVCF.

SAFETY

Road and in-block safety hazards associated with block TS2 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

Road segments with gradients > 18% have been identified on the Harvest and Road instruction Plan Map en route to the setting. 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 TS2 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 on the highway.



Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
186.9	186.9	186.6	26	25.9	[] crk 4 st
378.1	378.1	378.1	175	13.5	RP
449.5	449.5	449.1	219	16.8	[] Crk 5

Soil Type Legend

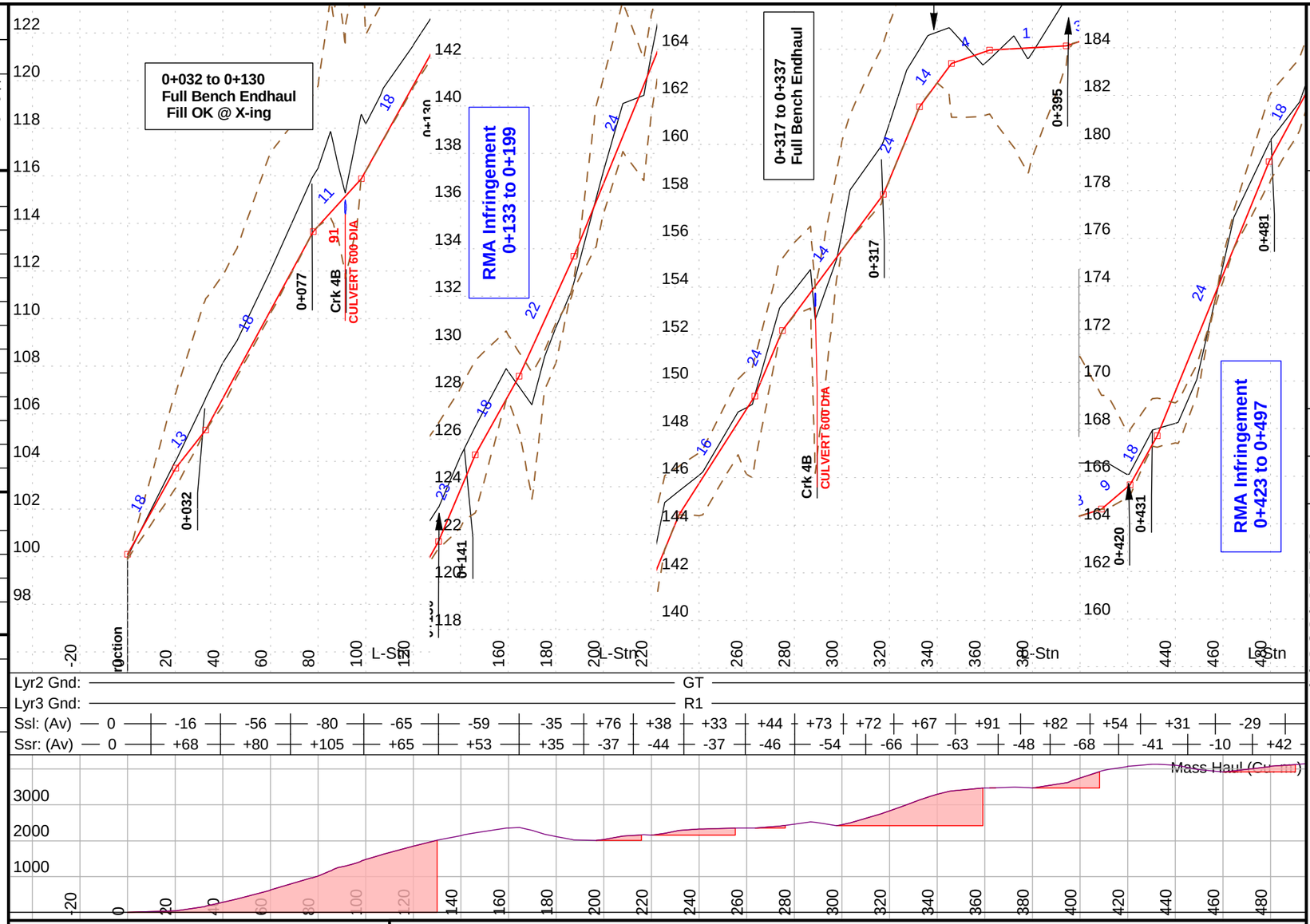
Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus / Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till <1m	150%	80%
W2	Weathered Till >1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

LEGEND

- Profile Subgrade
- Profile P-line Topography
- Profile Slope Stakes
- Culverts

Template Assignments

ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
91.3	600	10.0			65	
289.4	600	10.0			90	

Vertical Curves

K
Len.
Grade in
Grade out

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

PROFILE VIEW

Profile Vert Scale 1:200
Profile Horz Scale 1:2000

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Alberni Valley Community Forest | **ROAD:TA568J Cutblock:TS2** | \\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\Roads\Design\TA568\TA568.dsn | 16/02/17 |

Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
449.5	449.5	449.1	219	16.8	[] Crk 5
648.0	648.0	647.6	140	13.3	[] RP
742.6	742.6	742.2	86	32.7	Crk 4
866.6	866.6	866.0	186	30.8	
888.0	888.0	887.4	157	11.0	[] RP

Soil Type Legend

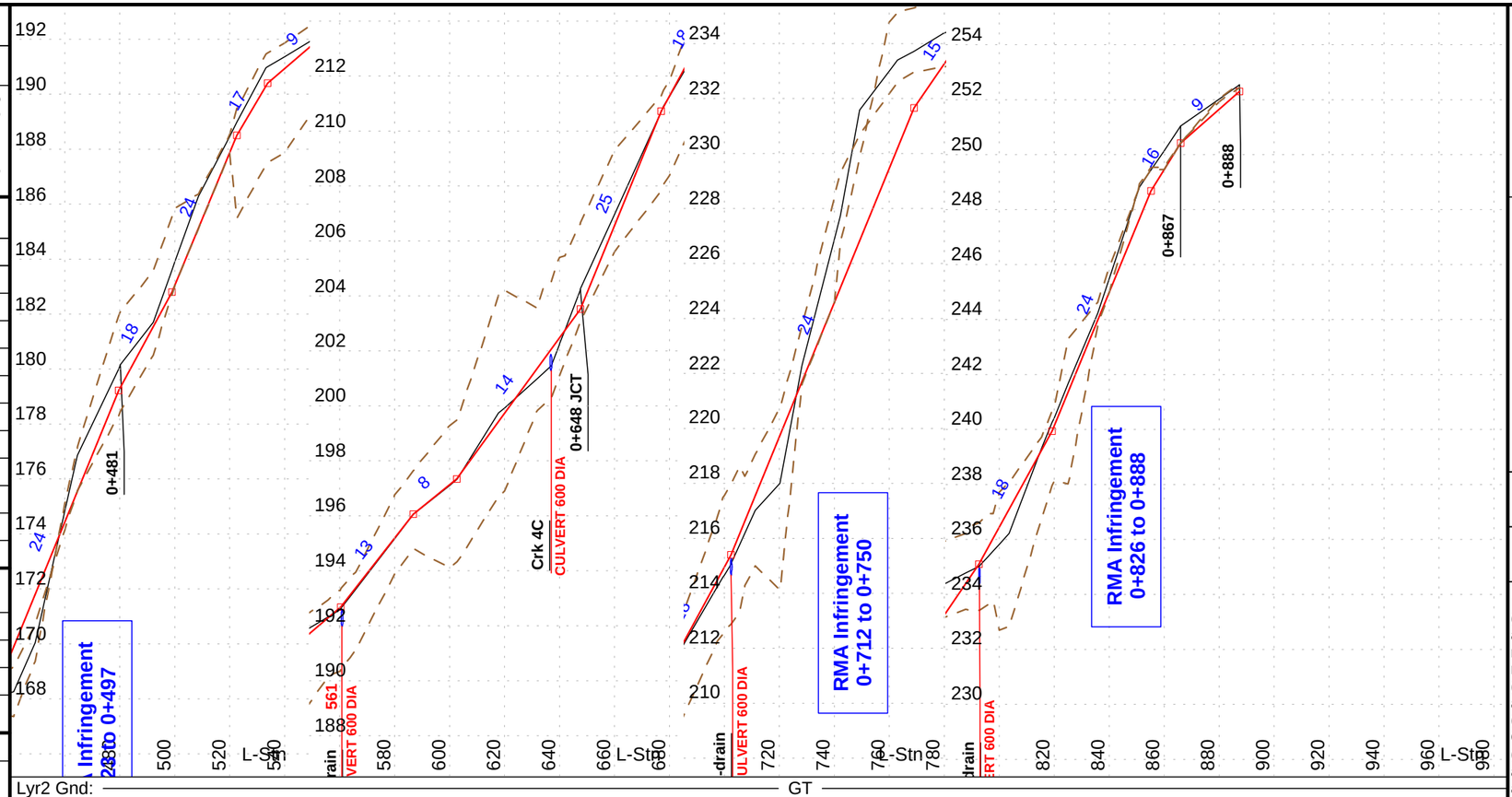
Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus / Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till <1m	150%	80%
W2	Weathered Till >1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

LEGEND

- Profile Subgrade
- Profile P-line Topography
- Profile Slope Stakes
- Culverts

Template Assignments

ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
561.3	600	10.0			70	
637.3	600	10.0			90	
702.9	600	10.0			90	
793.5	600	10.0			120	

Vertical Curves

K
Len.
Grade in
Grade out

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

PROFILE VIEW

Profile Vert Scale 1:200
Profile Horz Scale 1:2000

Notes:

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(4) Background information is approximate. Refer to construction and harvest maps.

DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Reference Points

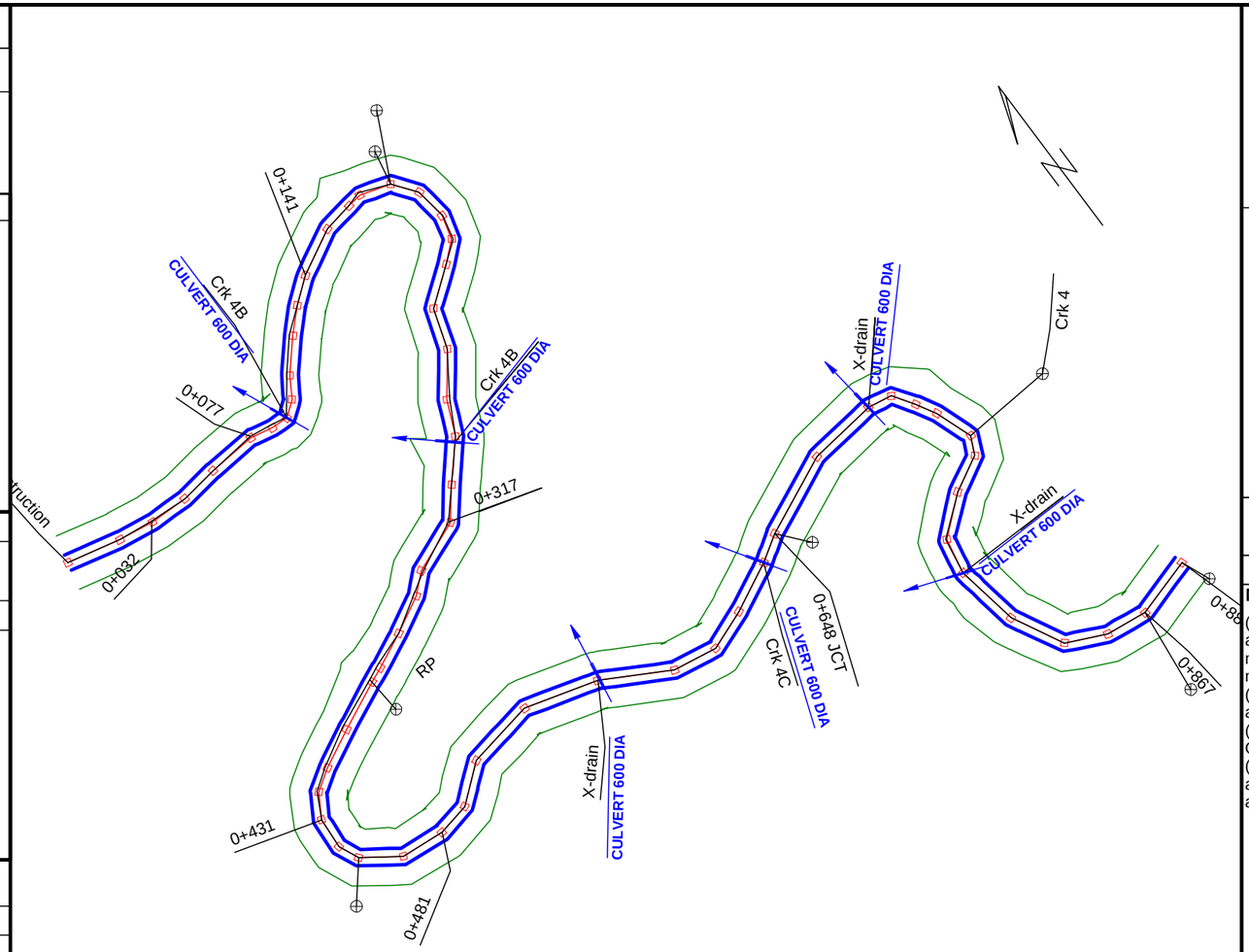
P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
186.9	186.9	186.6	26	25.9	[] crk 4 sta 15
378.1	378.1	378.1	175	13.5	RP
449.5	449.5	449.1	219	16.8	[] Crk 5
648.0	648.0	647.6	140	13.3	[] RP

Curve Table

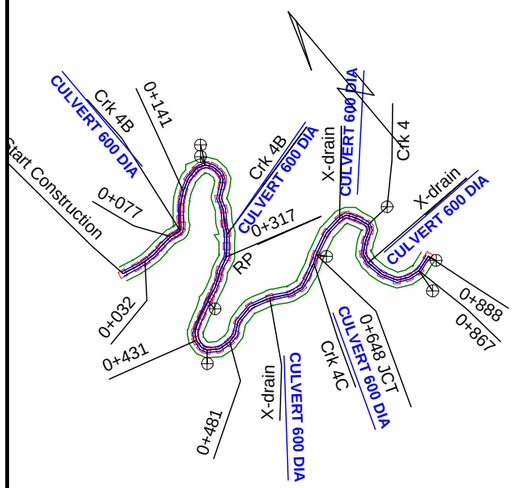
Angle
Tangent
Arc. Len.
Radius
BC Stn.
EC Stn.
Trans. Len.

Template Assignments

ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE



Overview Map



LEGEND

- Plan P-line Topography
- Plan L-line
- Plan R/W Clearing
- Plan Road Edges
- Culverts
- Reference Point
- P-Line Survey Point

Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
91.3	600	10.0			65	Crk #4B. Ditch block required.
289.4	600	10.0			90	Crk #4B.
561.3	600	10.0			70	Cross Drain. Establish Sump and ditch block.
637.3	600	10.0			90	Crk #4C.
702.9	600	10.0			90	Cross Drain. Establish sump and ditchblock.

Soil Type Legend

Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till < 1m	150%	80%
W2	Weathered Till > 1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

Alberni Valley Community Forest

ROAD: TA568J Cutblock: TS2

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

PLAN VIEW

Plan Scale 1:2000

Notes:
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DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

16/02/17

Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
866.6	866.6	866.0	186	30.8	
888.0	888.0	887.4	157	11.0	[] RP

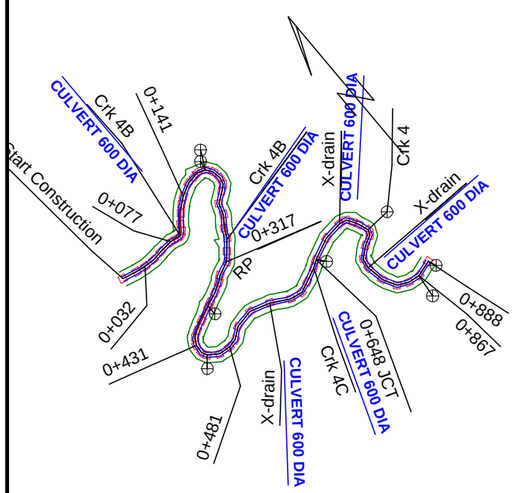
Curve Table

Angle
Tangent
Arc. Len.
Radius
BC Stn.
EC Stn.
Trans. Len.

Template Assignments

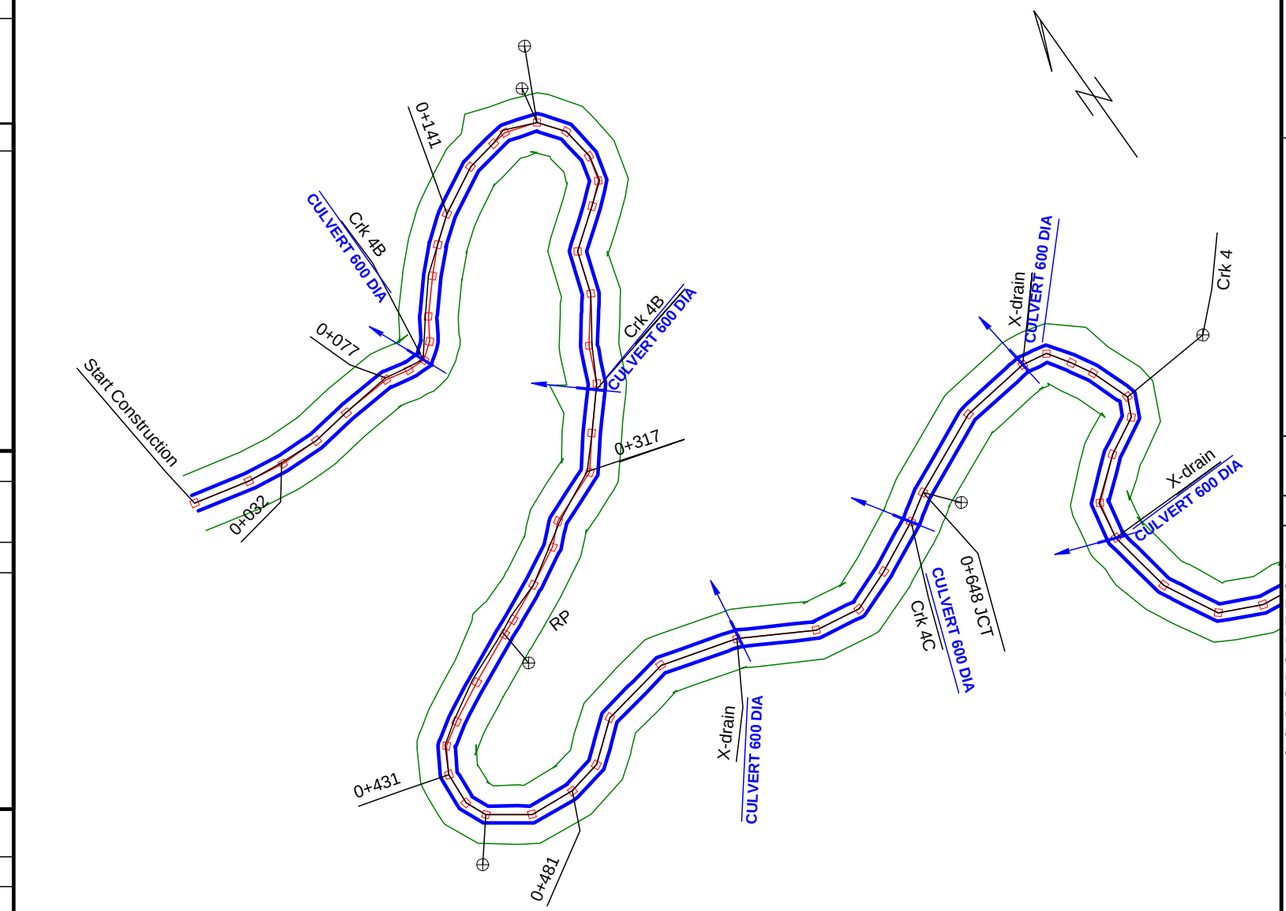
ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE

Overview Map



LEGEND

- Plan P-line Topography
- Plan L-line
- Plan R/W Clearing
- Plan Road Edges
- Culverts
- Reference Point
- P-Line Survey Point



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
793.5	600	10.0			120	Cross Drain. Estabish sump and ditch block.

Soil Type Legend

Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till < 1m	150%	80%
W2	Weathered Till > 1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

Alberni Valley Community Forest

ROAD: TA568J Cutblock: TS2

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

PLAN VIEW

Plan Scale 1:2000

Notes:

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(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

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DESIGN SPEED = 20km/hr unless otherwise stated

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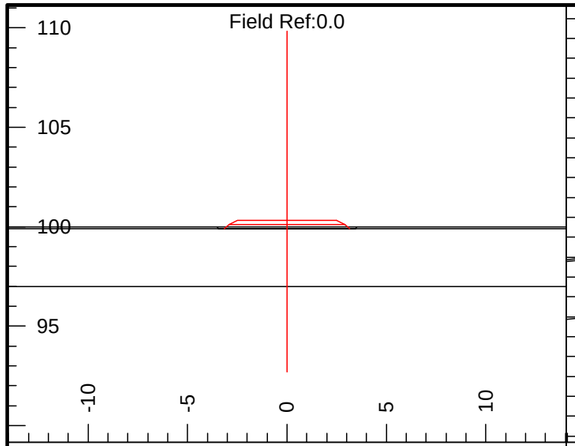
16/02/17



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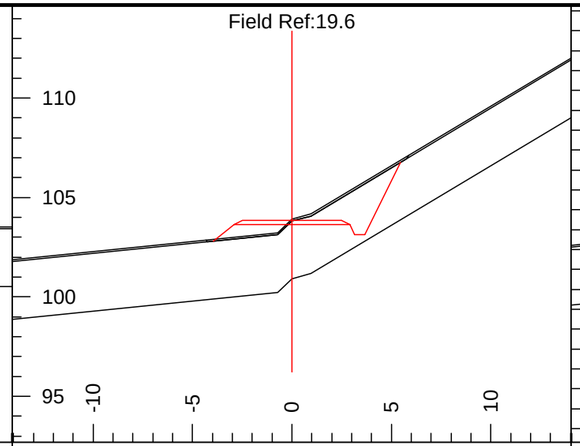

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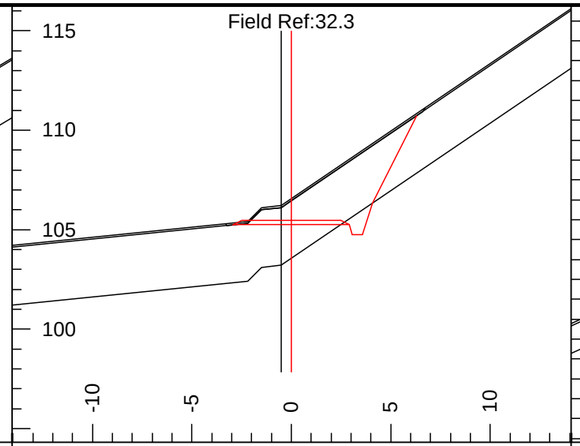

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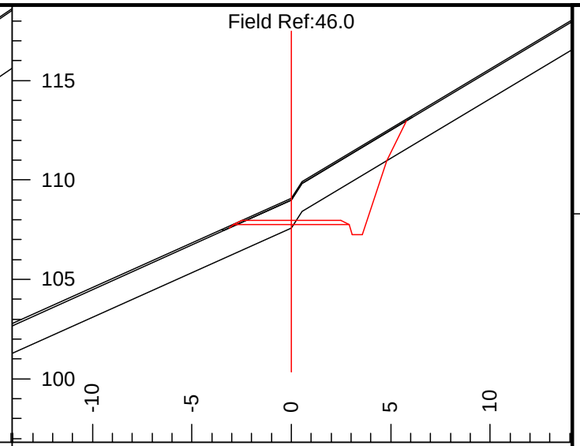

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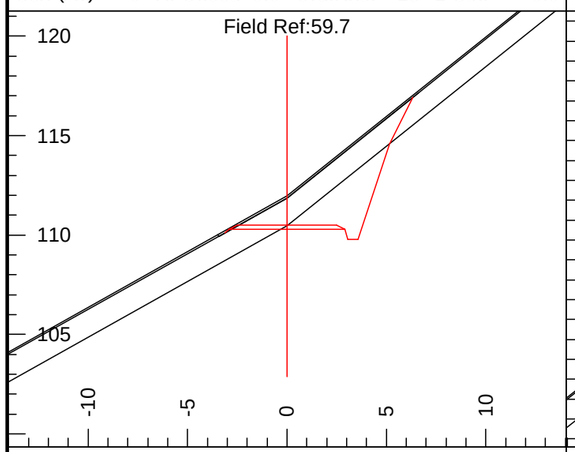

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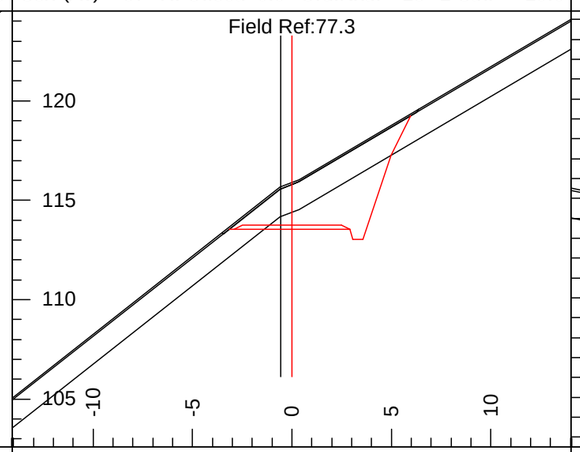

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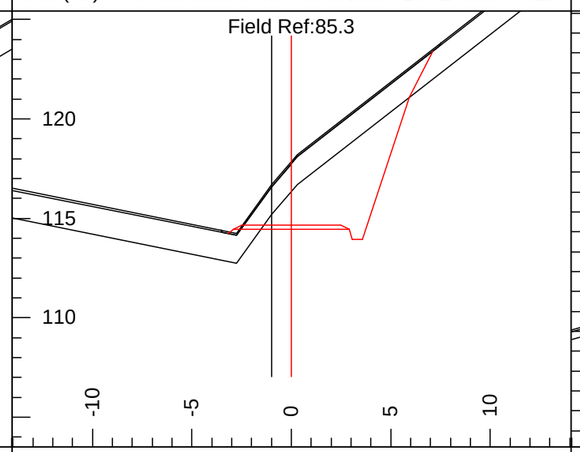

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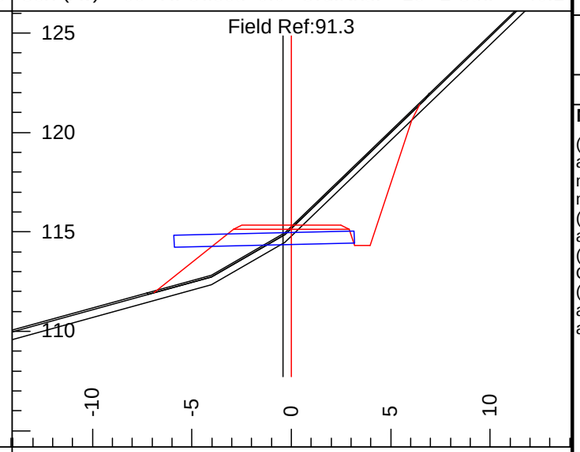

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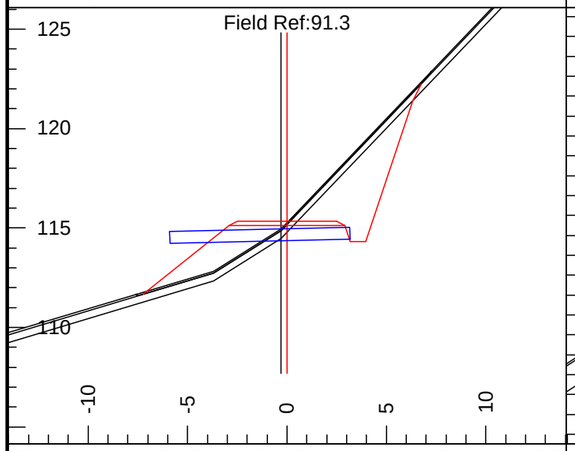

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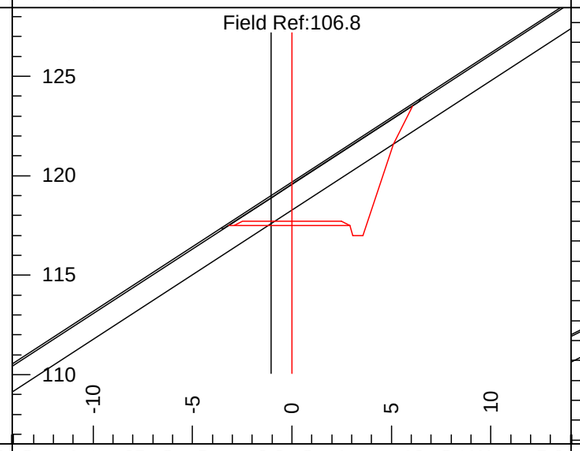

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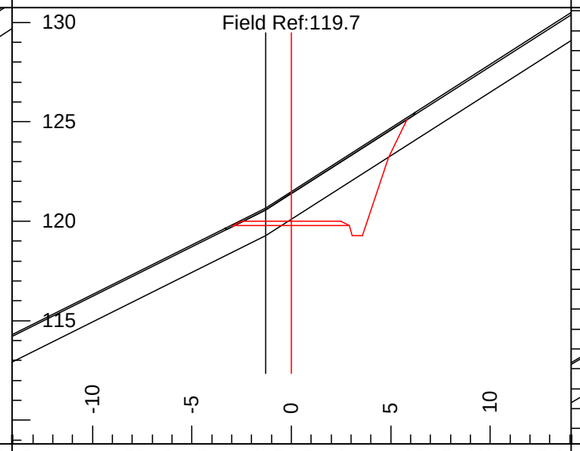

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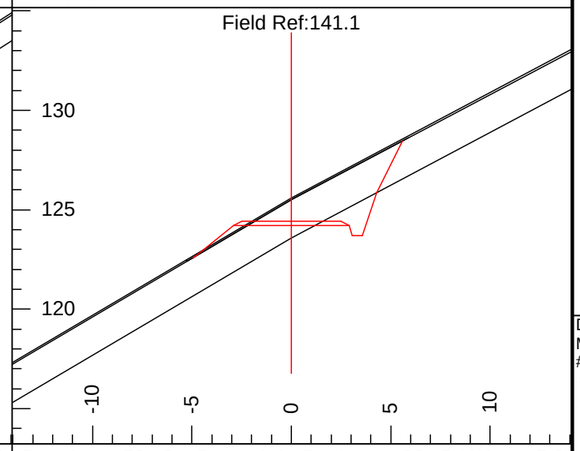

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Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

Section Scale 1:300

Notes:

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Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Alberni Valley Community Forest

ROAD: TA568J Cutblock: TS2

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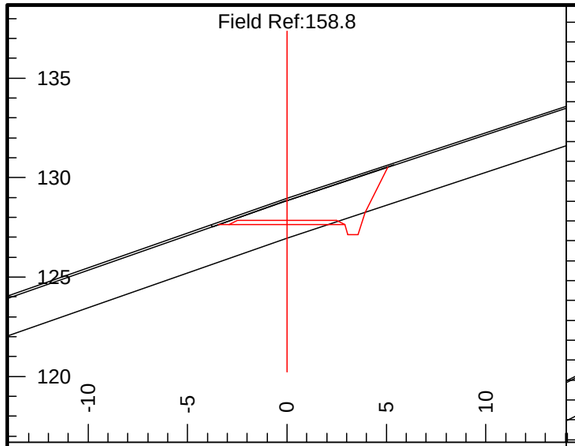
16/02/17



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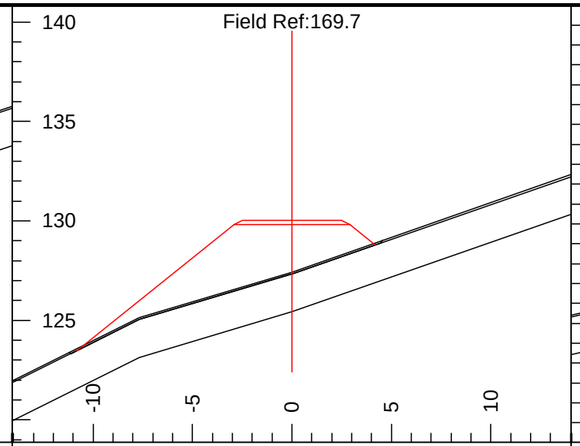
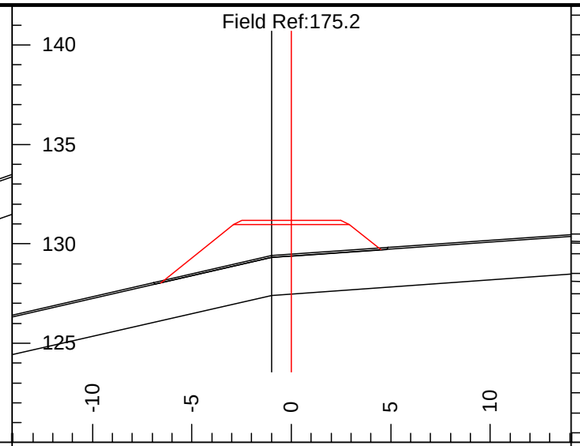
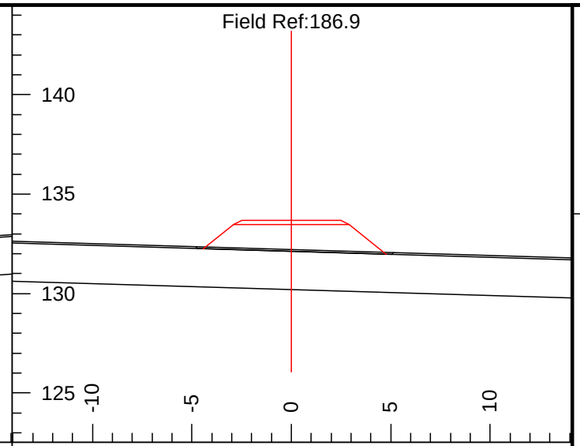


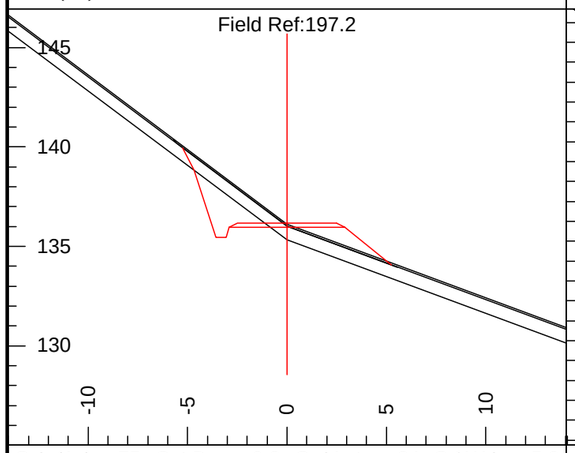
Ssl: (Av)	-35	Cut Dp:	-2.4	Grd.Lst:	22	Srf Wd.:	5.0		
Ssr: (Av)	35	H. Offset:	0.0	Grd.Nxt.:	22	L-Stn:	170.0		



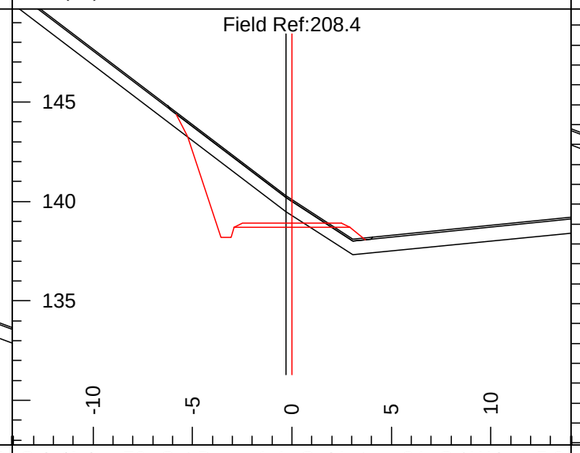
Ssl: (Av)	-23	Cut Dp:	-1.5	Grd.Lst:	22	Srf Wd.:	5.0		
Ssr: (Av)	7	H. Offset:	1.0	Grd.Nxt.:	22	L-Stn:	175.2		



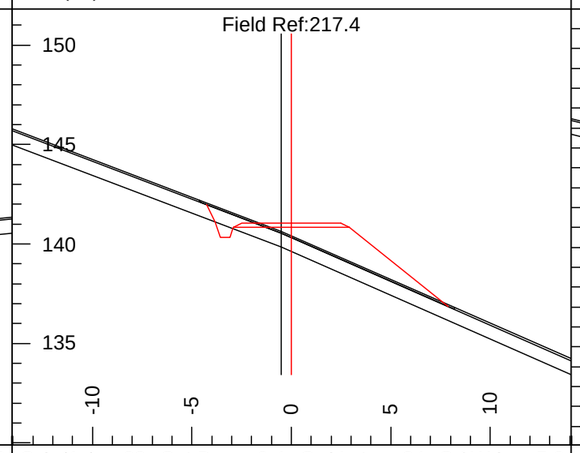
Ssl: (Av)	3	Cut Dp:	-1.3	Grd.Lst:	22	Srf Wd.:	5.0		
Ssr: (Av)	-3	H. Offset:	0.0	Grd.Nxt.:	22	L-Stn:	186.6		



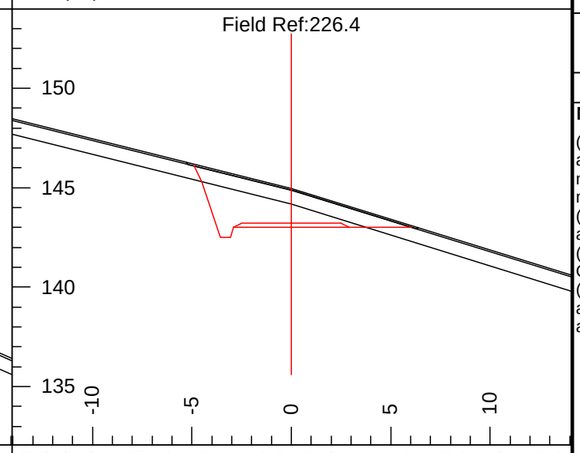
Ssl: (Av)	75	Cut Dp:	0.2	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-37	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	196.9		



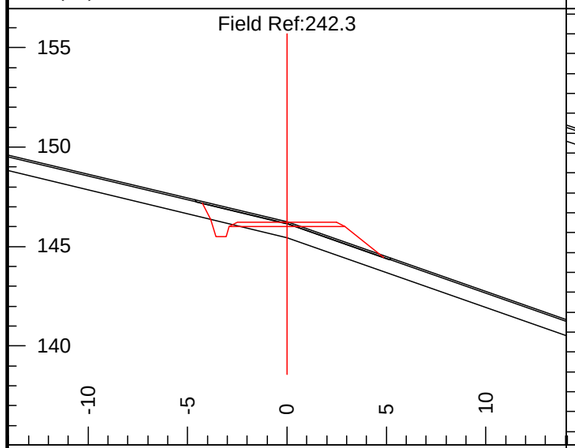
Ssl: (Av)	76	Cut Dp:	1.4	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-15	H. Offset:	0.3	Grd.Nxt.:	24	L-Stn:	208.1		



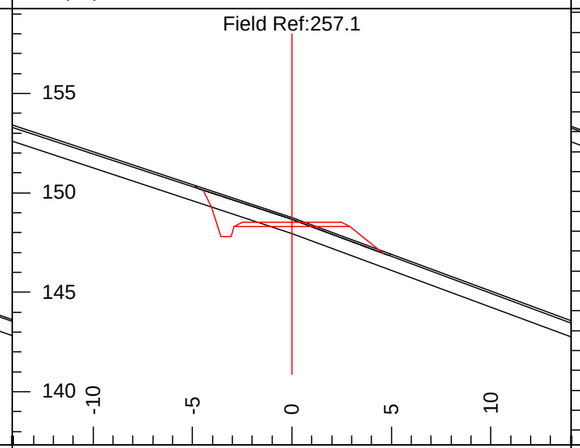
Ssl: (Av)	38	Cut Dp:	-0.4	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-44	H. Offset:	0.5	Grd.Nxt.:	24	L-Stn:	216.9		



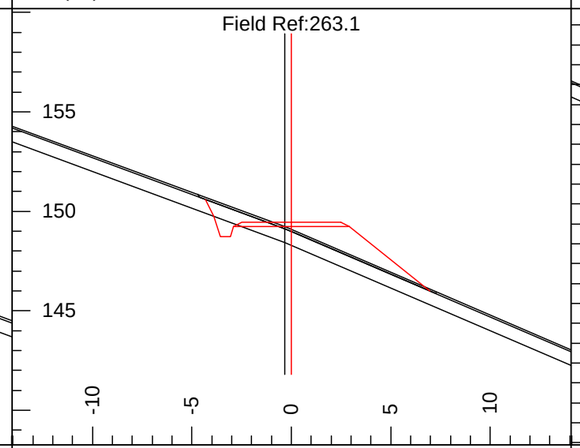
Ssl: (Av)	25	Cut Dp:	2.0	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-31	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	225.7		



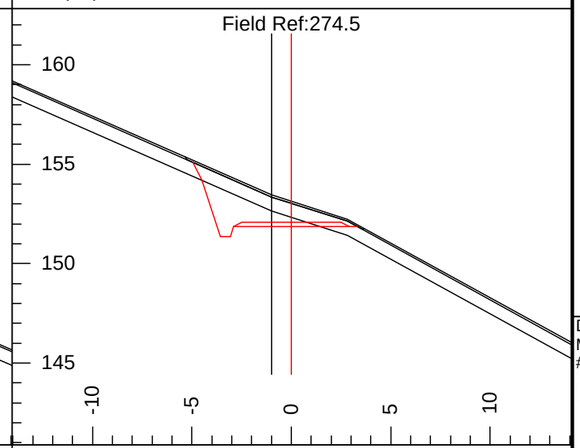
Ssl: (Av)	24	Cut Dp:	0.2	Grd.Lst:	16	Srf Wd.:	5.0		
Ssr: (Av)	-35	H. Offset:	0.0	Grd.Nxt.:	16	L-Stn:	241.6		



Ssl: (Av)	33	Cut Dp:	0.4	Grd.Lst:	16	Srf Wd.:	5.0		
Ssr: (Av)	-37	H. Offset:	0.0	Grd.Nxt.:	16	L-Stn:	256.4		



Ssl: (Av)	37	Cut Dp:	-0.2	Grd.Lst:	16	Srf Wd.:	5.0		
Ssr: (Av)	-43	H. Offset:	0.3	Grd.Nxt.:	16	L-Stn:	262.4		



Ssl: (Av)	44	Cut Dp:	1.3	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-46	H. Offset:	1.0	Grd.Nxt.:	24	L-Stn:	273.9		

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

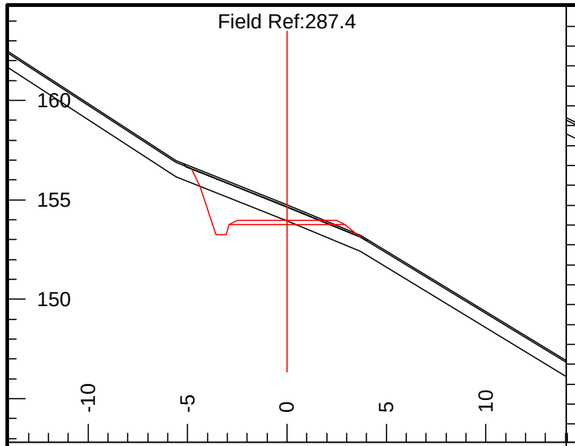
Section Scale 1:300

Notes:

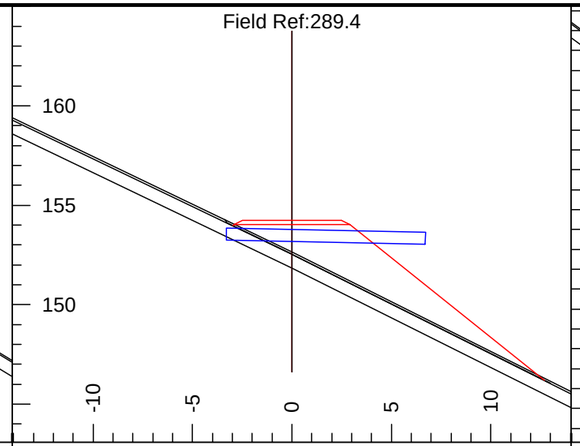
(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

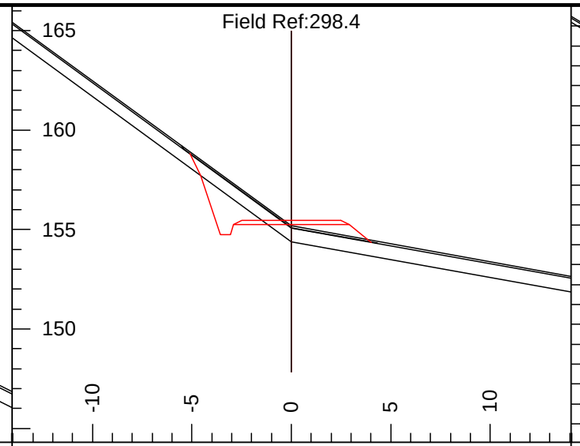
MERIDIAN Forest Services Ltd.



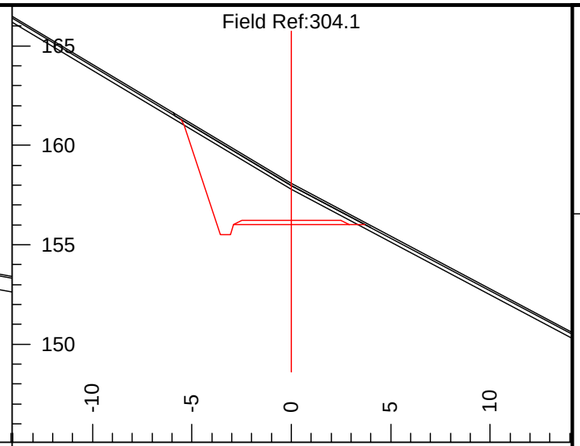
Ssl: (Av) 51 Cut Dp: 1.0 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -54 H. Offset: 0.0 Grd.Nxt.: 14 L-Stn: 286.9



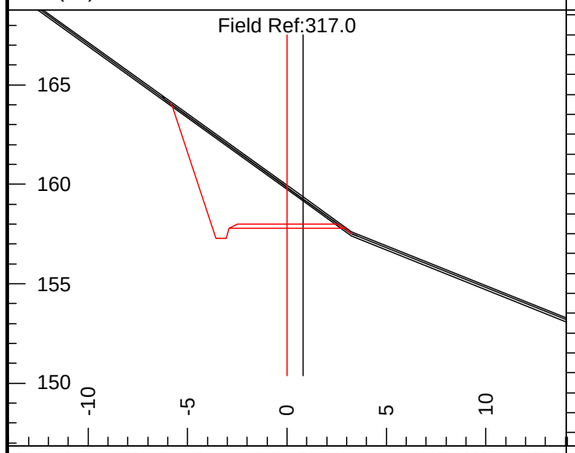
Ssl: (Av) 48 Cut Dp: -1.4 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -50 H. Offset: 0.0 Grd.Nxt.: 14 L-Stn: 288.9



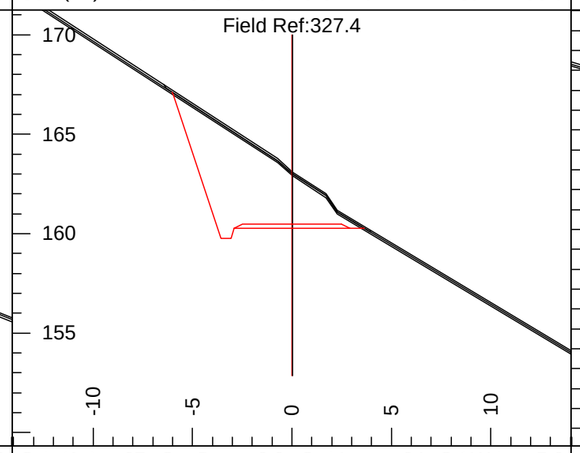
Ssl: (Av) 73 Cut Dp: -0.1 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -18 H. Offset: 0.0 Grd.Nxt.: 14 L-Stn: 297.9



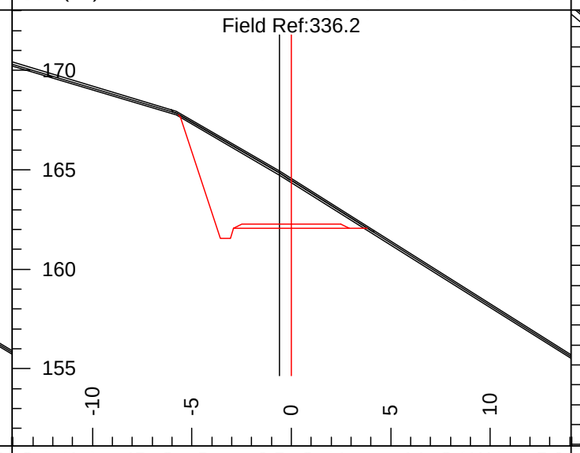
Ssl: (Av) 60 Cut Dp: 2.1 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -53 H. Offset: 0.0 Grd.Nxt.: 14 L-Stn: 303.6



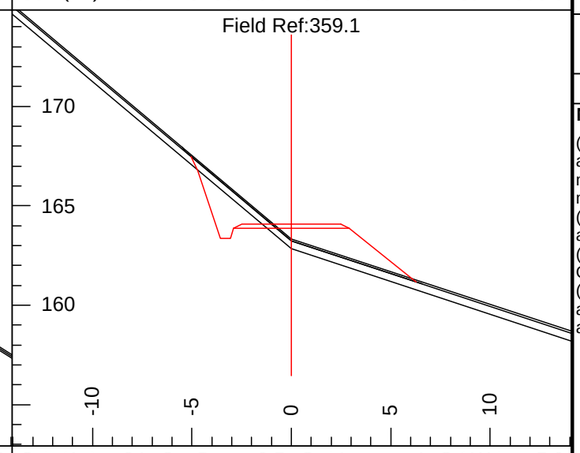
Ssl: (Av) 72 Cut Dp: 2.2 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -48 H. Offset: -0.8 Grd.Nxt.: 14 L-Stn: 316.7



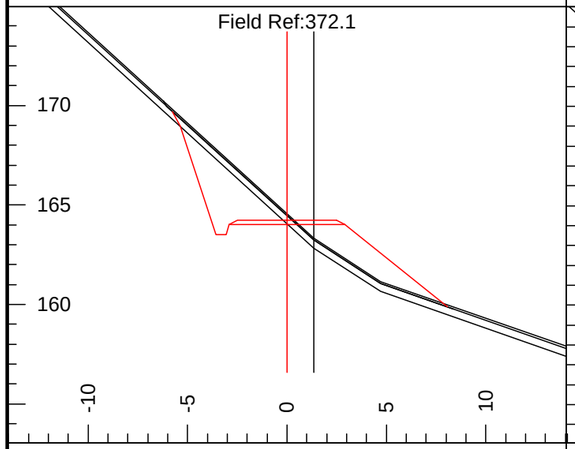
Ssl: (Av) 67 Cut Dp: 2.9 Grd.Lst: 24 Srf Wd.: 5.0
Ssr: (Av) -66 H. Offset: 0.0 Grd.Nxt.: 24 L-Stn: 327.2



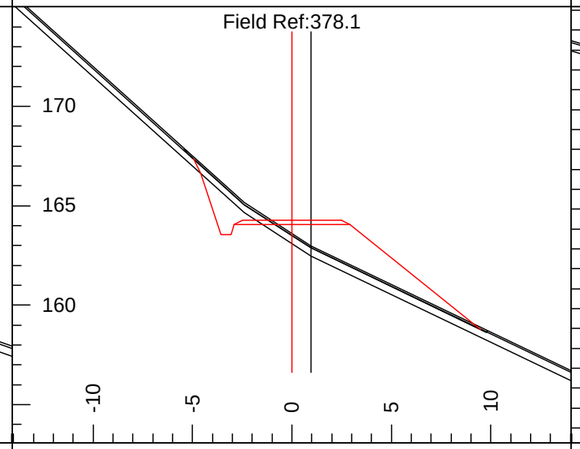
Ssl: (Av) 45 Cut Dp: 2.5 Grd.Lst: 14 Srf Wd.: 5.0
Ssr: (Av) -63 H. Offset: 0.6 Grd.Nxt.: 14 L-Stn: 336.1



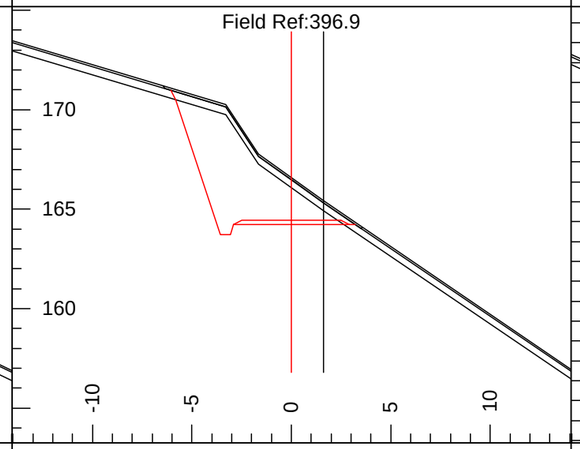
Ssl: (Av) 84 Cut Dp: -0.5 Grd.Lst: 4 Srf Wd.: 5.0
Ssr: (Av) -33 H. Offset: 0.0 Grd.Nxt.: 4 L-Stn: 359.2



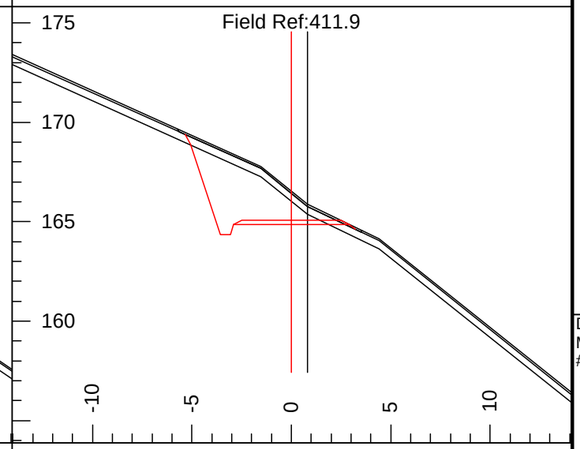
Ssl: (Av) 91 Cut Dp: 0.6 Grd.Lst: 1 Srf Wd.: 5.0
Ssr: (Av) -45 H. Offset: -1.4 Grd.Nxt.: 1 L-Stn: 372.2



Ssl: (Av) 82 Cut Dp: -0.5 Grd.Lst: 1 Srf Wd.: 5.0
Ssr: (Av) -48 H. Offset: -1.0 Grd.Nxt.: 1 L-Stn: 378.1



Ssl: (Av) 64 Cut Dp: 2.3 Grd.Lst: 3 Srf Wd.: 5.0
Ssr: (Av) -68 H. Offset: -1.6 Grd.Nxt.: 3 L-Stn: 396.9



Ssl: (Av) 54 Cut Dp: 1.7 Grd.Lst: 9 Srf Wd.: 5.0
Ssr: (Av) -68 H. Offset: -0.8 Grd.Nxt.: 9 L-Stn: 411.8

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

Section Scale 1:300

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
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#15 1010 Shearme Road
Coombs BC, V0R1M0
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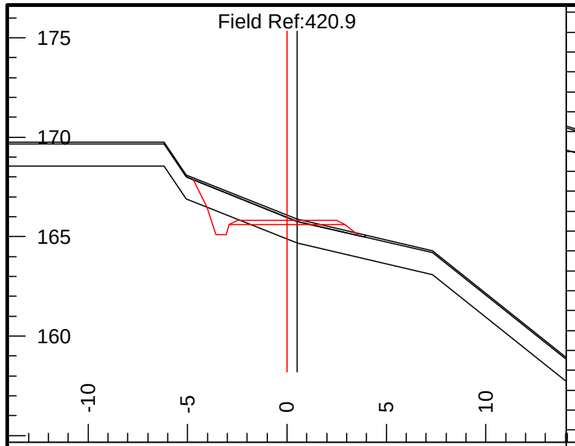
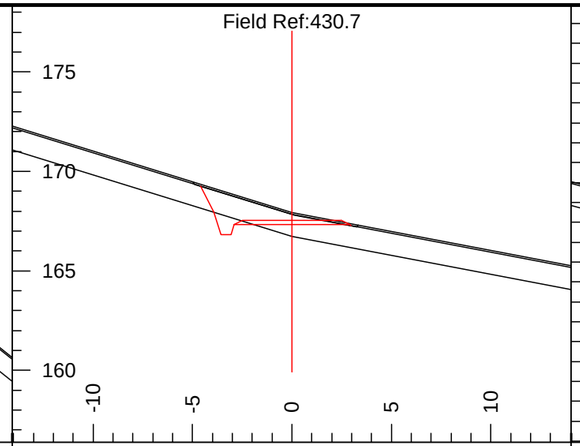
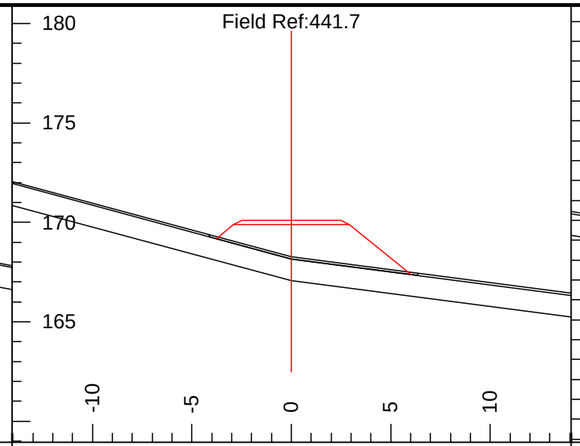


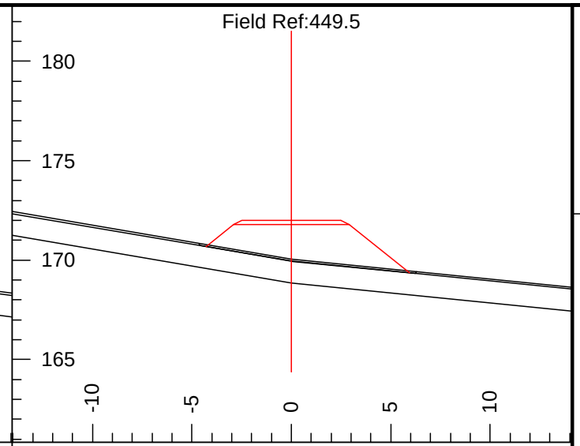
Ssl: (Av)	39	Cut Dp:	0.5	Grd.Lst:	9	Srf Wd.:	5.0		
Ssr: (Av)	-41	H. Offset:	-0.5	Grd.Nxt.:	9	L-Stn:	420.6		



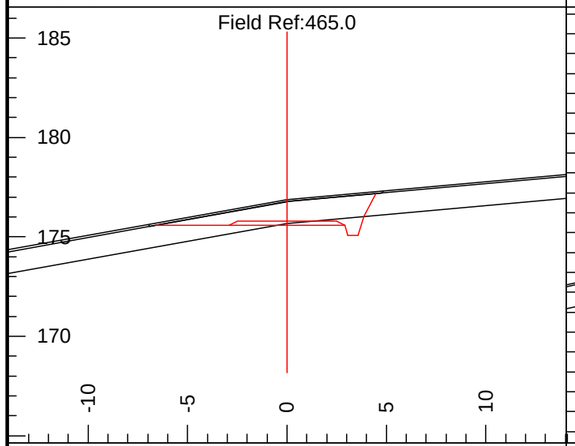
Ssl: (Av)	31	Cut Dp:	0.6	Grd.Lst:	18	Srf Wd.:	5.0		
Ssr: (Av)	-19	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	430.3		



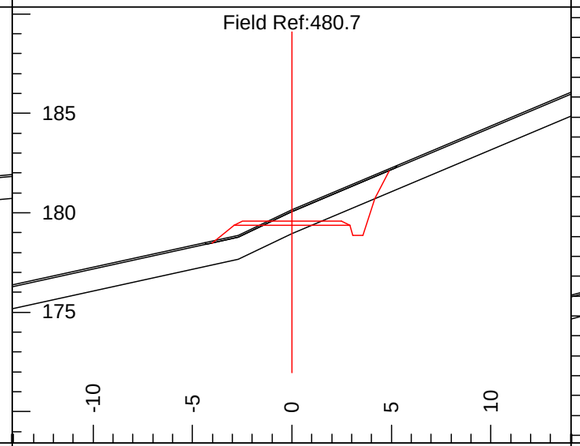
Ssl: (Av)	27	Cut Dp:	-1.6	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-13	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	441.3		



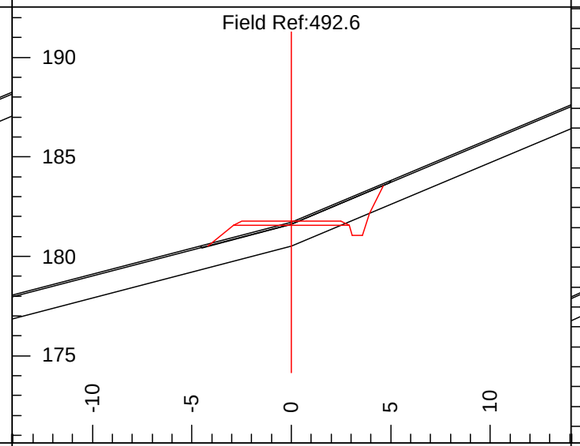
Ssl: (Av)	17	Cut Dp:	-1.7	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	-10	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	449.1		



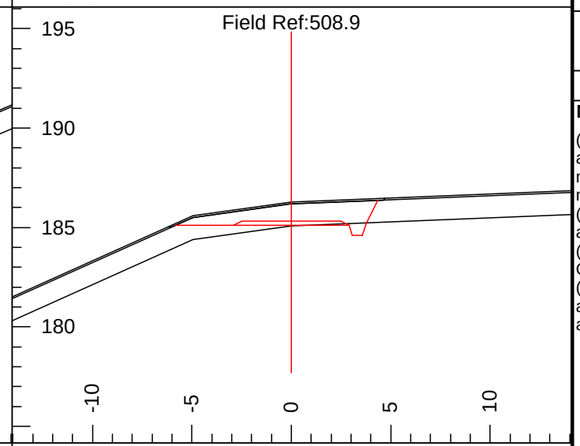
Ssl: (Av)	-18	Cut Dp:	1.3	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	9	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	464.6		



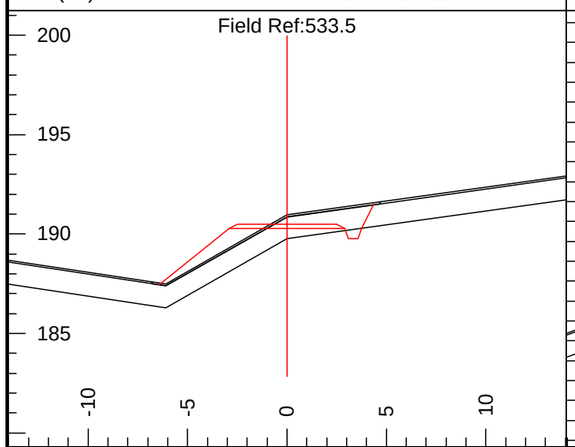
Ssl: (Av)	-29	Cut Dp:	0.8	Grd.Lst:	18	Srf Wd.:	5.0		
Ssr: (Av)	42	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	480.3		



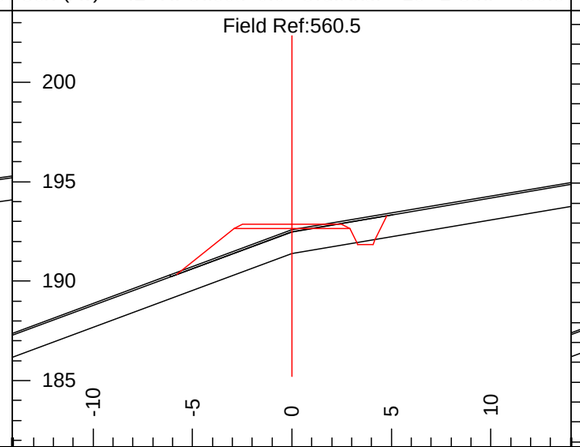
Ssl: (Av)	-26	Cut Dp:	0.1	Grd.Lst:	18	Srf Wd.:	5.0		
Ssr: (Av)	42	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	492.2		



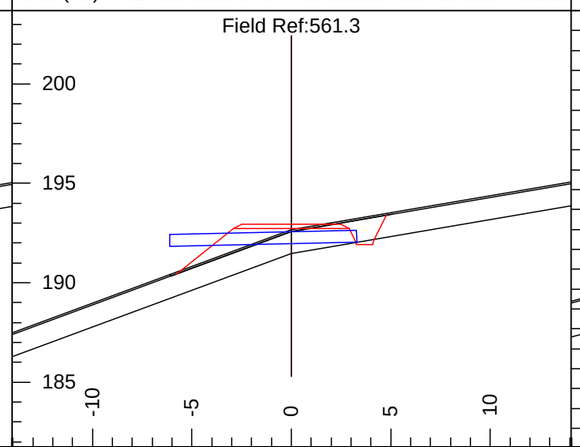
Ssl: (Av)	-30	Cut Dp:	1.2	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	4	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	508.5		



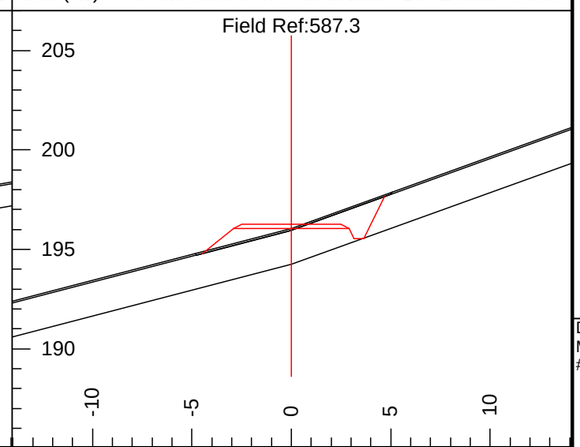
Ssl: (Av)	-29	Cut Dp:	0.7	Grd.Lst:	17	Srf Wd.:	5.0		
Ssr: (Av)	14	H. Offset:	0.0	Grd.Nxt.:	17	L-Stn:	533.1		



Ssl: (Av)	-37	Cut Dp:	-0.1	Grd.Lst:	9	Srf Wd.:	5.0		
Ssr: (Av)	17	H. Offset:	0.0	Grd.Nxt.:	9	L-Stn:	560.1		



Ssl: (Av)	-37	Cut Dp:	-0.1	Grd.Lst:	13	Srf Wd.:	5.0		
Ssr: (Av)	17	H. Offset:	0.0	Grd.Nxt.:	13	L-Stn:	560.9		



Ssl: (Av)	-26	Cut Dp:	0.0	Grd.Lst:	13	Srf Wd.:	5.0		
Ssr: (Av)	36	H. Offset:	0.0	Grd.Nxt.:	13	L-Stn:	586.9		

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

Section Scale 1:300

Notes:

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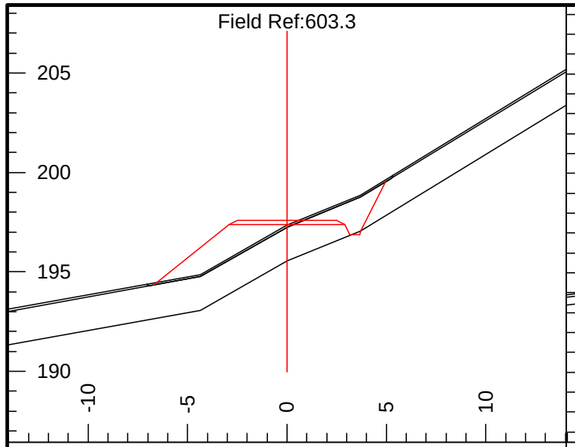
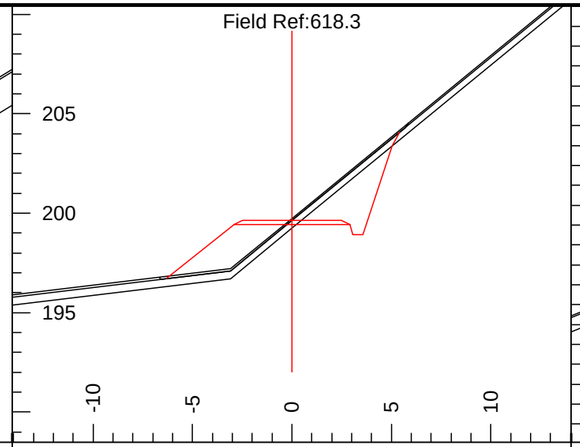
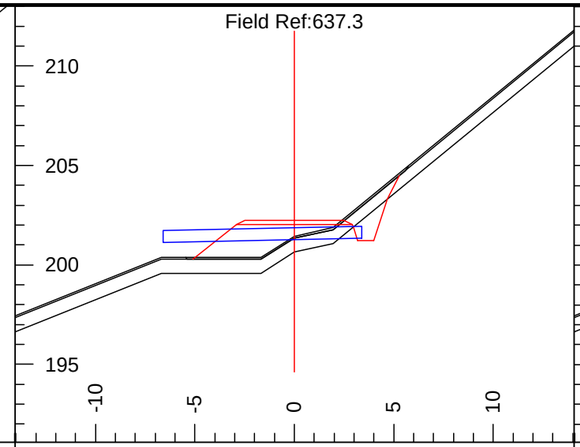


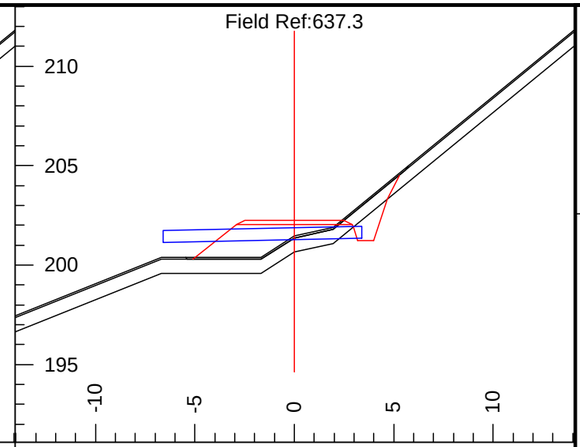
Ssl: (Av)	-35	Cut Dp:	0.0	Grd.Lst:	14	Srf Wd.:	5.0		
Ssr: (Av)	54	H. Offset:	0.0	Grd.Nxt.:	14	L-Stn:	602.9		



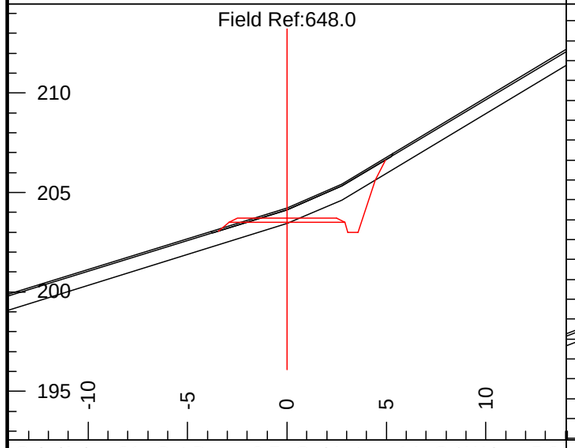
Ssl: (Av)	-34	Cut Dp:	0.3	Grd.Lst:	14	Srf Wd.:	5.0		
Ssr: (Av)	82	H. Offset:	0.0	Grd.Nxt.:	14	L-Stn:	617.9		



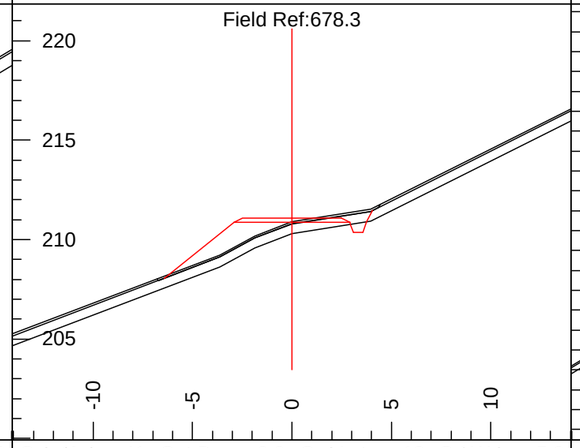
Ssl: (Av)	-24	Cut Dp:	-0.6	Grd.Lst:	14	Srf Wd.:	5.0		
Ssr: (Av)	70	H. Offset:	0.0	Grd.Nxt.:	14	L-Stn:	636.9		



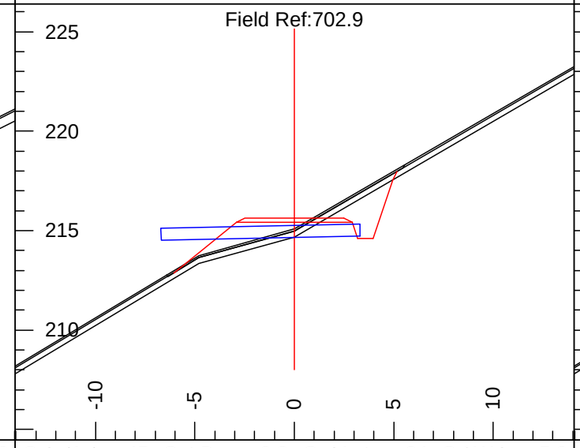
Ssl: (Av)	-24	Cut Dp:	-0.6	Grd.Lst:	14	Srf Wd.:	5.0		
Ssr: (Av)	70	H. Offset:	0.0	Grd.Nxt.:	14	L-Stn:	636.9		



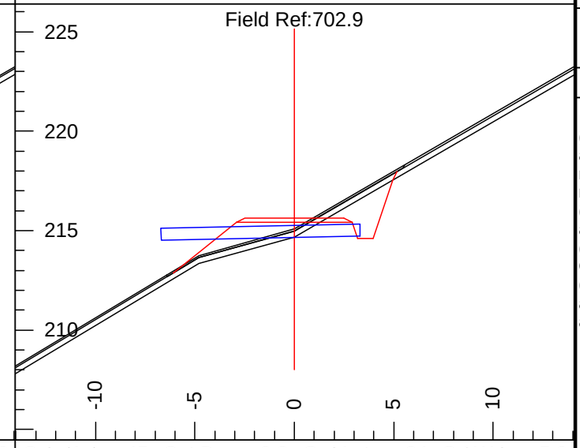
Ssl: (Av)	-31	Cut Dp:	0.7	Grd.Lst:	14	Srf Wd.:	5.0		
Ssr: (Av)	55	H. Offset:	0.0	Grd.Nxt.:	14	L-Stn:	647.6		



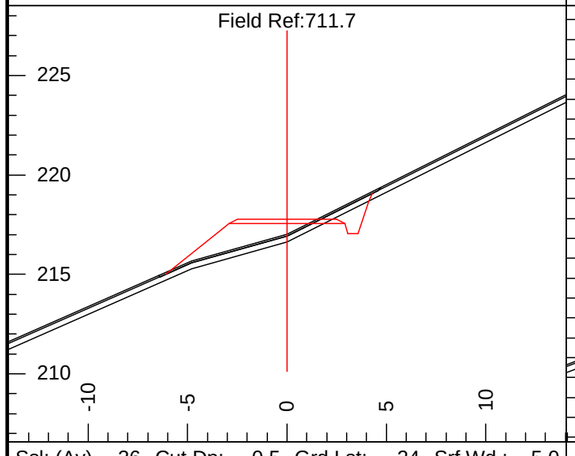
Ssl: (Av)	-41	Cut Dp:	0.0	Grd.Lst:	18	Srf Wd.:	5.0		
Ssr: (Av)	37	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	677.9		



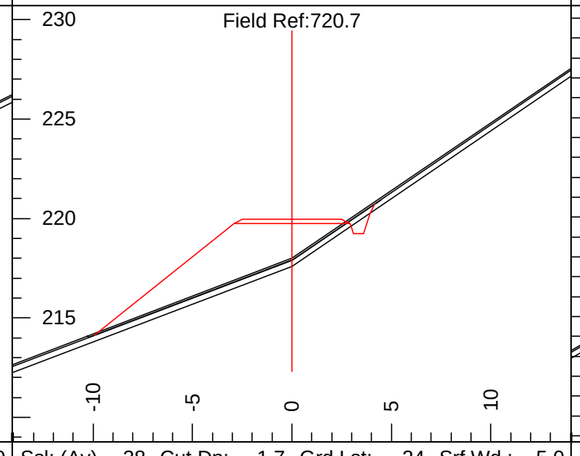
Ssl: (Av)	-45	Cut Dp:	-0.3	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	58	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	702.5		



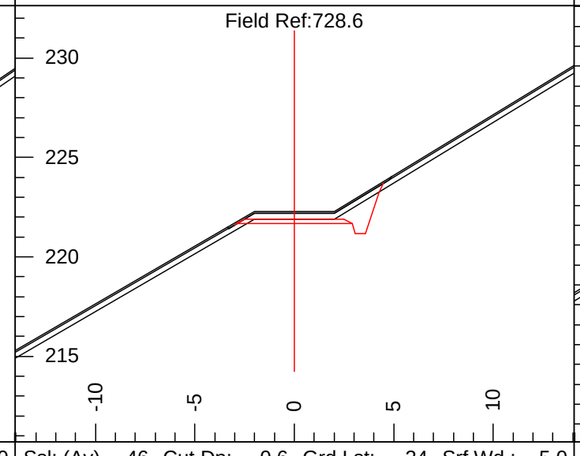
Ssl: (Av)	-45	Cut Dp:	-0.3	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	58	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	702.5		



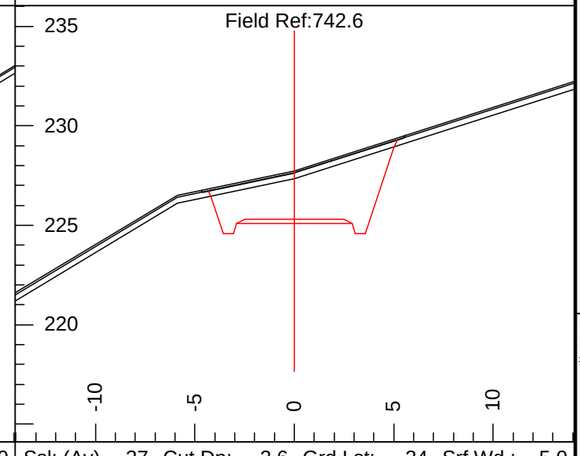
Ssl: (Av)	-36	Cut Dp:	-0.5	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	50	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	711.3		



Ssl: (Av)	-38	Cut Dp:	-1.7	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	68	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	720.3		



Ssl: (Av)	-46	Cut Dp:	0.6	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	49	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	728.2		



Ssl: (Av)	-37	Cut Dp:	2.6	Grd.Lst:	24	Srf Wd.:	5.0		
Ssr: (Av)	32	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	742.2		

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

Section Scale 1:300

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
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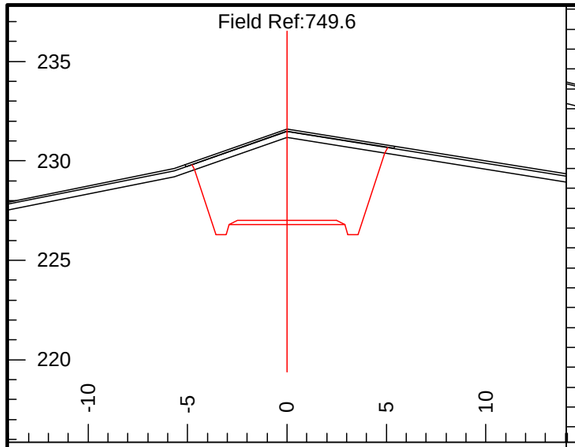
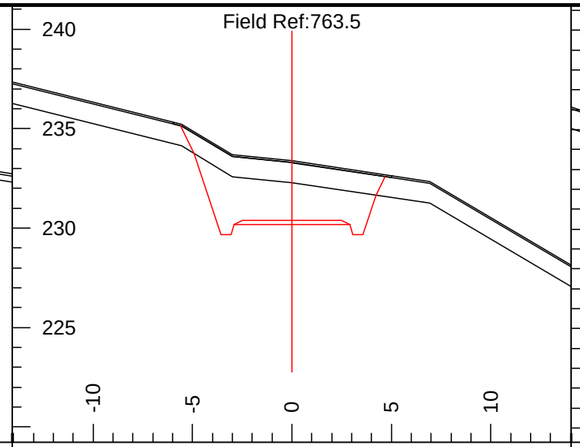
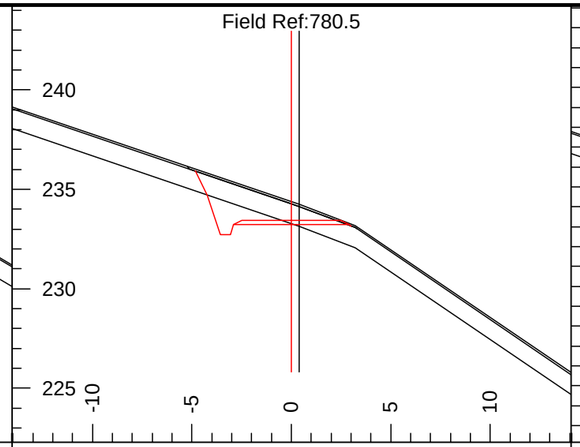


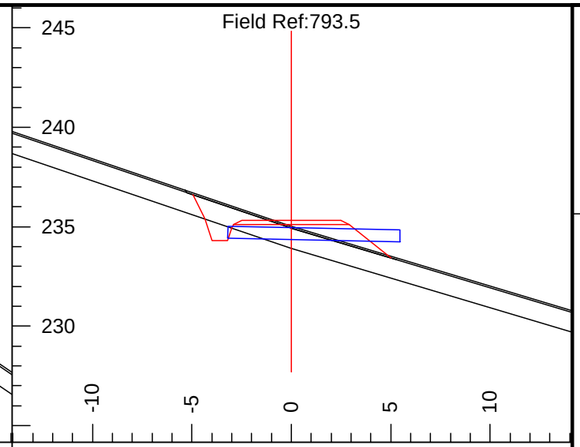
Ssl: (Av)	-28	Cut Dp:	4.8	Grd.Lst:	24	Srf Wd.:	5.0				
Ssr: (Av)	-16	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	749.2				



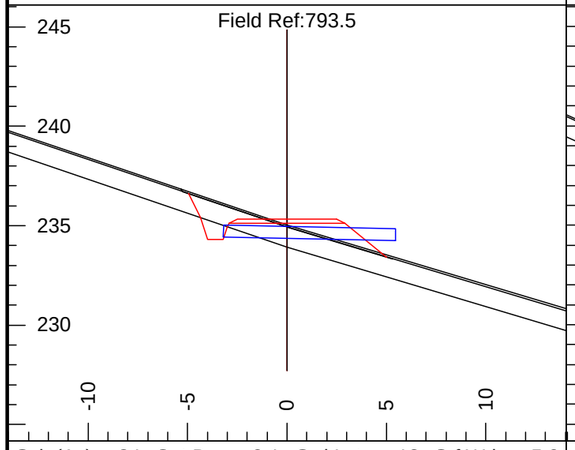
Ssl: (Av)	30	Cut Dp:	3.2	Grd.Lst:	24	Srf Wd.:	5.0				
Ssr: (Av)	-29	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	763.1				



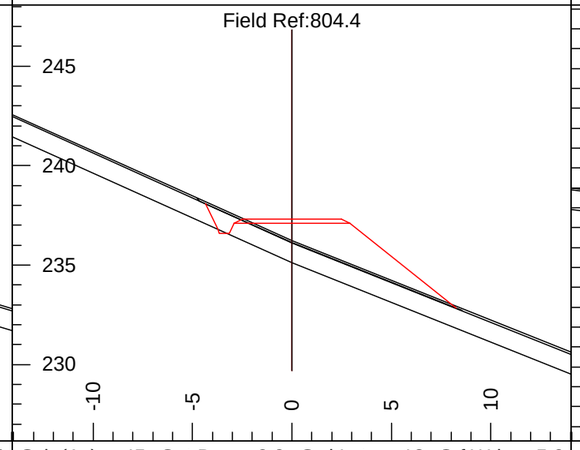
Ssl: (Av)	34	Cut Dp:	1.1	Grd.Lst:	15	Srf Wd.:	5.0				
Ssr: (Av)	-60	H. Offset:	-0.4	Grd.Nxt.:	15	L-Stn:	779.9				



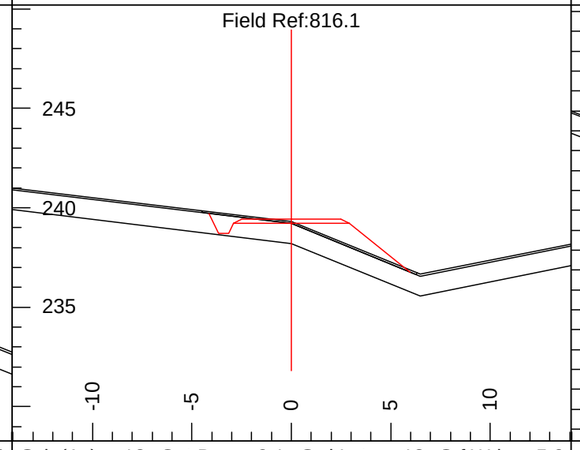
Ssl: (Av)	34	Cut Dp:	-0.1	Grd.Lst:	18	Srf Wd.:	5.0				
Ssr: (Av)	-30	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	792.8				



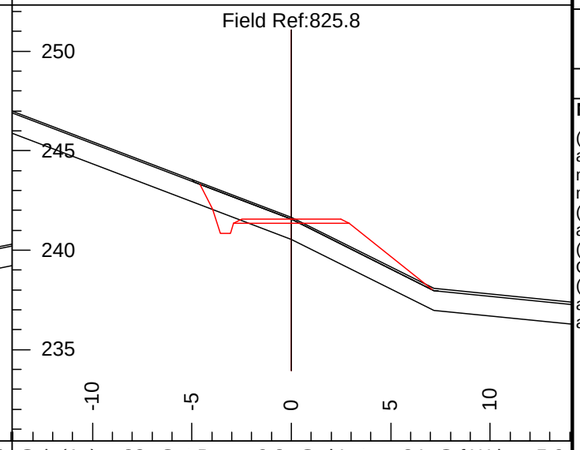
Ssl: (Av)	34	Cut Dp:	-0.1	Grd.Lst:	18	Srf Wd.:	5.0				
Ssr: (Av)	-30	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	792.8				



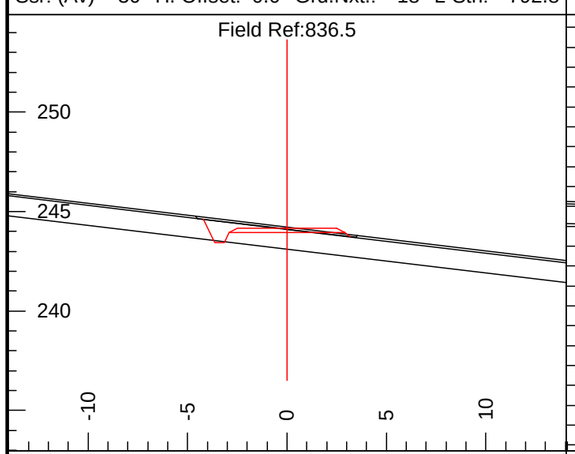
Ssl: (Av)	45	Cut Dp:	-0.9	Grd.Lst:	18	Srf Wd.:	5.0				
Ssr: (Av)	-40	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	803.7				



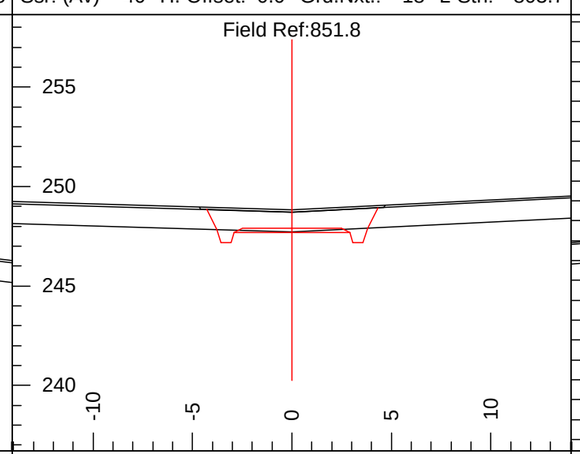
Ssl: (Av)	12	Cut Dp:	0.1	Grd.Lst:	18	Srf Wd.:	5.0				
Ssr: (Av)	-20	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	815.4				



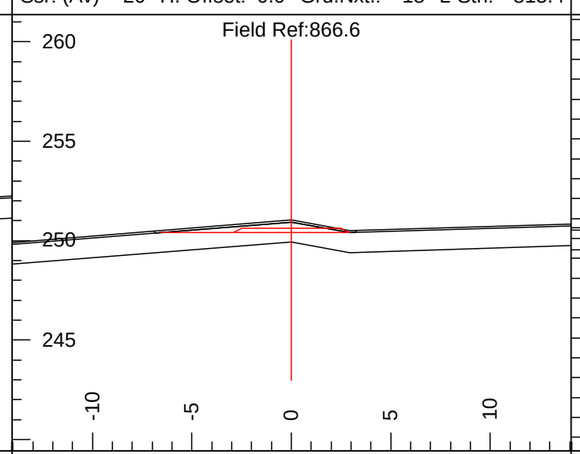
Ssl: (Av)	38	Cut Dp:	0.3	Grd.Lst:	24	Srf Wd.:	5.0				
Ssr: (Av)	-39	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	825.1				



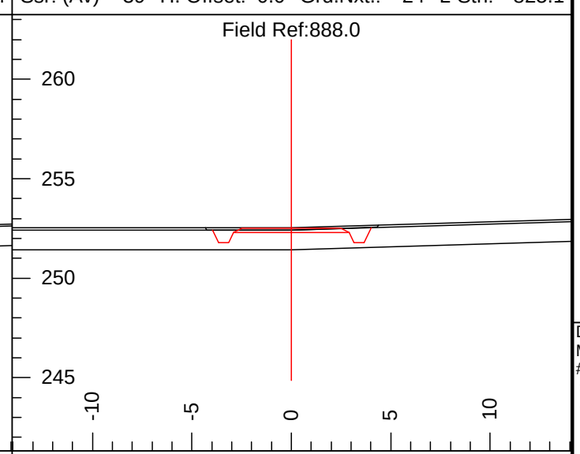
Ssl: (Av)	12	Cut Dp:	0.3	Grd.Lst:	24	Srf Wd.:	5.0				
Ssr: (Av)	-12	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	835.8				



Ssl: (Av)	3	Cut Dp:	1.1	Grd.Lst:	24	Srf Wd.:	5.0				
Ssr: (Av)	5	H. Offset:	0.0	Grd.Nxt.:	24	L-Stn:	851.1				



Ssl: (Av)	-8	Cut Dp:	0.6	Grd.Lst:	16	Srf Wd.:	5.0				
Ssr: (Av)	-3	H. Offset:	0.0	Grd.Nxt.:	16	L-Stn:	866.0				



Ssl: (Av)	0	Cut Dp:	0.2	Grd.Lst:	9	Srf Wd.:	5.0				
Ssr: (Av)	3	H. Offset:	0.0	Grd.Nxt.:	n/a	L-Stn:	887.4				

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

CROSS SECTIONS

Section Scale 1:300

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
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Coombs BC, V0R1M0
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P-Stn m.	Field Ref.	Ssl %	Ssr %	Bank Ht. L m.	Bank Ht. R m.	SG Cut V. Cu. m.	SG Fill V. Cu. m.	Strip V. Cu. m.	Mass H. Cu. m.	Lyr1 Gnd	Lyr2 Gnd	Lyr3 Gnd
0.0	0.0	0	0						0.0	OB	GT	R1
19.6	19.6	-16	57	-0.2	2.9	61.0	31.0	16.8	29.9	OB	GT	R1
32.3	32.3	-16	68	-0.2	5.3	136.3	12.6	12.7	153.6	OB	GT	R1
46.0	46.0	-45	65	-0.2	5.0	218.3	0.3	13.5	371.6	OB	GT	R1
59.7	59.7	-56	80	-0.2	6.4	240.6	0.2	13.5	612.0	OB	GT	R1
77.3	77.3	-80	58	-0.2	5.5	345.2	0.0	17.3	957.2	OB	GT	R1
85.3	85.3	-8	83	-0.2	8.7	196.6	0.3	8.1	1153.5	OB	GT	R1
91.3	91.3	-41	105	-0.2	6.9	152.7	13.3	7.9	1292.9	OB	GT	R1
106.8	106.8	-65	65	-0.2	5.8	343.9	19.0	17.9	1617.8	OB	GT	R1
119.7	119.7	-50	64	-0.2	5.1	235.1	0.0	12.4	1852.9	OB	GT	R1
141.1	141.1	-59	53	-0.2	4.0	312.9	3.9	21.4	2161.9	OB	GT	R1
158.8	158.8	-35	33	-0.2	2.7	200.8	13.2	19.2	2349.5	OB	GT	R1
169.7	169.7	-35	35			36.2	99.1	12.4	2286.7	OB	GT	R1
175.2	175.2	-23	7			0.0	108.3	7.2	2178.4	OB	GT	R1
186.9	186.9	3	-3			0.0	143.4	12.5	2035.0	OB	GT	R1
197.2	197.2	75	-37	3.8	-0.2	36.1	62.5	10.6	2008.6	OB	GT	R1
208.4	208.4	76	-15	5.5	-0.2	128.2	12.2	11.7	2124.6	OB	GT	R1
217.4	217.4	38	-44	0.9		75.3	38.1	10.1	2161.8	OB	GT	R1
226.4	226.4	25	-31	2.9	-0.2	72.5	21.6	10.0	2212.7	OB	GT	R1
242.3	242.3	24	-35	1.0	-0.2	119.2	8.8	14.8	2323.0	OB	GT	R1
257.1	257.1	33	-37	1.6	-0.2	54.7	24.3	14.4	2353.5	OB	GT	R1
263.1	263.1	37	-43	1.2		21.2	21.2	6.6	2353.5	OB	GT	R1
274.5	274.5	44	-46	3.0	-0.2	76.1	27.2	11.8	2402.4	OB	GT	R1
287.4	287.4	51	-54	2.6	-0.2	121.8	0.8	11.4	2523.3	OB	GT	R1
289.4	289.4	48	-50			8.5	23.4	2.6	2508.4	OB	GT	R1
298.4	298.4	73	-18	3.4		28.5	111.4	11.7	2425.5	OB	GT	R1
304.1	304.1	60	-53	5.1	-0.2	73.1	1.7	5.5	2496.9	OB	GT	R1
317.0	317.0	72	-48	6.1	-0.2	262.2	0.1	12.9	2759.1	OB	GT	R1
327.4	327.4	67	-66	6.7	-0.2	252.6	0.0	10.5	3011.6	OB	GT	R1
336.2	336.2	45	-63	5.5	-0.2	207.6	0.0	9.0	3219.2	OB	GT	R1
359.1	359.1	84	-33	3.4		300.8	47.3	25.3	3472.6	OB	GT	R1
372.1	372.1	91	-45	5.5	-0.2	108.8	87.5	16.9	3493.9	OB	GT	R1
378.1	378.1	82	-48	3.1		49.9	57.0	8.8	3486.8	OB	GT	R1
396.9	396.9	64	-68	6.5	-0.2	274.2	81.3	23.2	3679.8	OB	GT	R1
411.9	411.9	54	-68	4.3	-0.2	313.7	0.0	14.2	3993.4	OB	GT	R1
420.9	420.9	39	-41	2.0	-0.2	91.1	1.6	8.4	4082.9	OB	GT	R1
430.7	430.7	31	-19	1.7	-0.2	55.4	1.7	8.4	4136.5	OB	GT	R1
441.7	441.7	27	-13			24.0	57.5	10.1	4103.0	OB	GT	R1
449.5	449.5	17	-10			0.0	108.0	8.3	3995.1	OB	GT	R1
465.0	465.0	-18	9	-0.2	1.4	42.2	80.7	15.0	3956.6	OB	GT	R1
480.7	480.7	-29	42	-0.2	2.5	134.0	7.5	16.6	4083.1	OB	GT	R1
492.6	492.6	-26	42	-0.2	1.8	68.9	13.6	11.4	4138.4	OB	GT	R1
508.9	508.9	-30	4	-0.2	1.1	121.8	4.9	15.3	4255.3	OB	GT	R1
533.5	533.5	-29	14	-0.2	1.0	118.8	46.6	25.8	4327.5	OB	GT	R1
560.5	560.5	-37	17		0.4	67.6	107.4	30.1	4287.7	OB	GT	R1
587.3	587.3	-26	36		1.4	65.1	77.4	27.5	4275.4	OB	GT	R1
603.3	603.3	-35	54		1.9	57.1	77.4	18.1	4255.0	OB	GT	R1
618.3	618.3	-34	82	-0.2	4.4	97.8	102.4	18.5	4250.4	OB	GT	R1
637.3	637.3	-24	70		2.3	100.1	122.1	21.5	4228.3	OB	GT	R1
648.0	648.0	-31	55	-0.2	2.9	50.5	34.8	10.7	4244.0	OB	GT	R1
678.3	678.3	-41	37		0.4	144.0	57.8	30.2	4330.2	OB	GT	R1
702.9	702.9	-45	58		2.4	71.7	102.9	27.6	4298.9	OB	GT	R1
711.7	711.7	-36	50		1.3	31.2	43.0	10.1	4287.1	OB	GT	R1
720.7	720.7	-38	68		0.8	13.3	114.3	11.6	4186.1	OB	GT	R1
728.6	728.6	-46	49	-0.2	1.8	22.4	78.6	9.1	4130.0	OB	GT	R1
742.6	742.6	-37	32	1.4	4.0	216.8	0.0	15.2	4346.8	OB	GT	R1
749.6	749.6	-28	-16	2.8	3.7	210.2	0.0	7.3	4557.0	OB	GT	R1
763.5	763.5	30	-29	4.8	2.2	458.9	0.0	15.1	5015.9	OB	GT	R1
780.5	780.5	34	-60	2.5	-0.2	279.1	0.0	16.5	5295.0	OB	GT	R1
793.5	793.5	34	-30	1.3		75.9	12.9	12.0	5357.9	OB	GT	R1
804.4	804.4	45	-40	0.8		22.9	73.0	12.8	5307.8	OB	GT	R1
816.1	816.1	12	-20	0.3	-0.2	14.7	86.6	14.0	5235.9	OB	GT	R1
825.8	825.8	38	-39	1.7	-0.2	25.6	29.9	10.6	5231.6	OB	GT	R1
836.5	836.5	12	-12	0.5	-0.2	34.7	23.2	10.9	5243.2	OB	GT	R1
851.8	851.8	3	5	1.0	1.0	84.9	0.4	13.2	5327.7	OB	GT	R1
866.6	866.6	-8	-3	-0.2		74.9	0.0	15.4	5402.6	OB	GT	R1
888.0	888.0	0	3	-0.1	0.1	57.5	0.0	19.7	5460.1	OB	GT	R1

Cutblock: TS2
Road: TA568J

Road Design
0+000 to 0+888

APPRAISAL DATA TABLE

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
0.0	0.0	0.0	210	11.5	
63.2	63.2	63.2	240	15.0	

Soil Type Legend

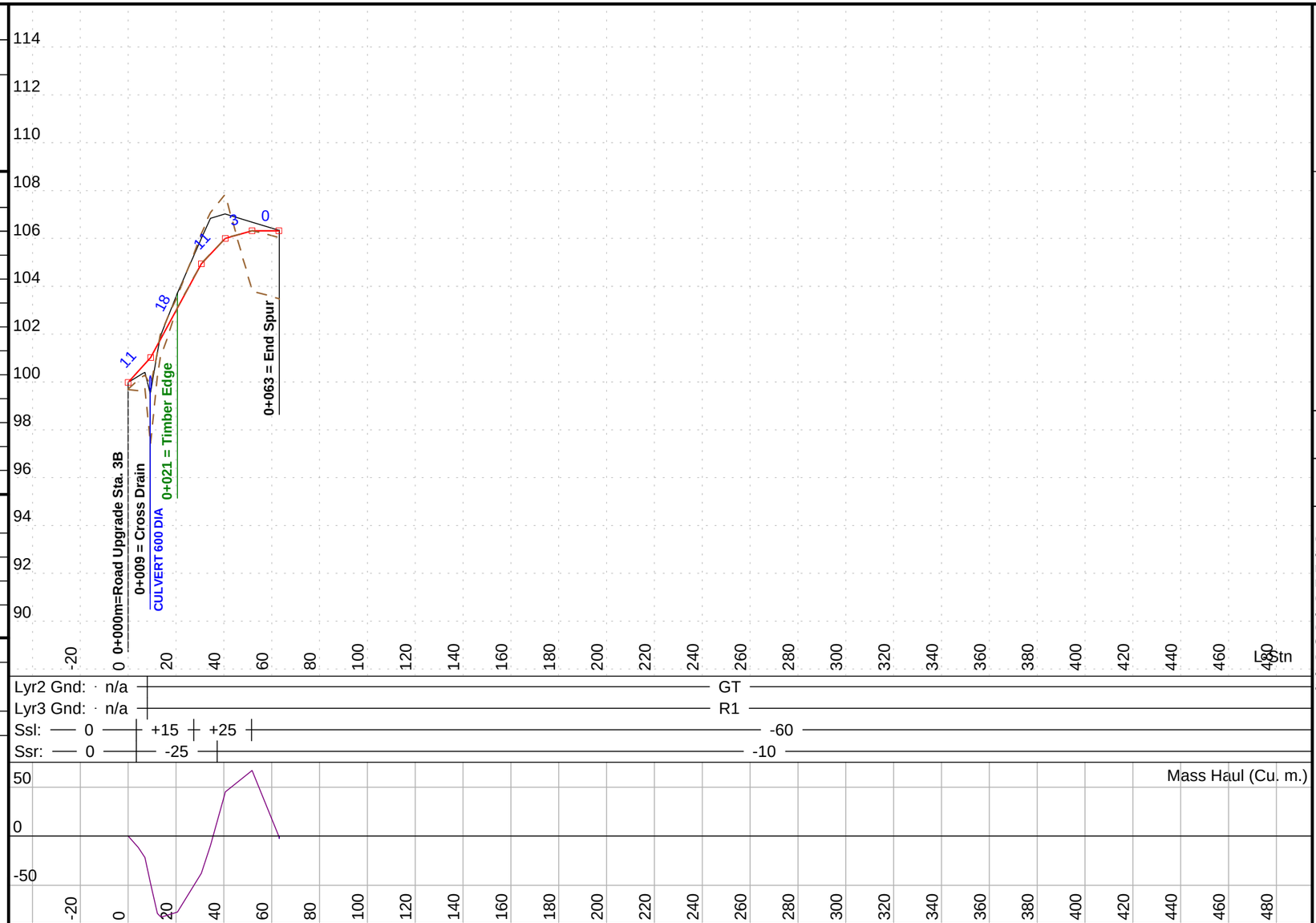
Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus / Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till <1m	150%	80%
W2	Weathered Till >1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

LEGEND

- Profile Subgrade
- Profile P-line Topography
- Profile Slope Stakes
- Culverts

Template Assignments

ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
9.3	600	10.1			90	

Vertical Curves

K
Len.
Grade in
Grade out

Cutblock: TS2
Road: TA568G

Road Design
0+000 to 0+063

PROFILE VIEW

Profile Vert Scale 1:200
Profile Horz Scale 1:2000

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
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DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
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Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
0.0	0.0	0.0	210	11.5	
63.2	63.2	63.2	240	15.0	

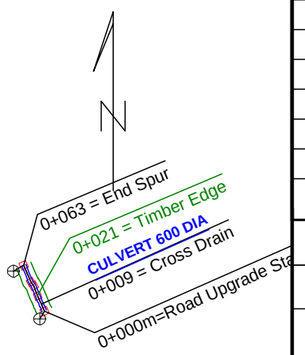
Curve Table

Angle
Tangent
Arc. Len.
Radius
BC Stn.
EC Stn.
Trans. Len.

Template Assignments

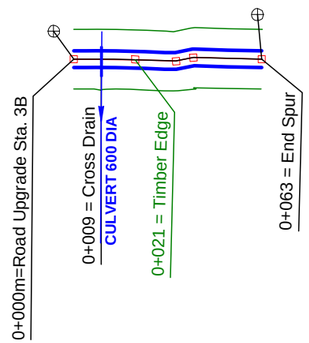
ID	P-Stn From	P-Stn To	Description
DF	..	..	DEFAULT TEMPLATE

Overview Map



LEGEND

Plan P-line Topography
Plan L-line
Plan R/W Clearing
Plan Road Edges
Culverts
Reference Point
P-Line Survey Point



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
9.3	600	10.1			90	

Soil Type Legend

Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
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W1	Weathered Till < 1m	150%	80%
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SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

Cutblock: TS2
Road: TA568G

Road Design
0+000 to 0+063

PLAN VIEW

Plan Scale 1:2000

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
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(4) Background information is approximate. Refer to construction and harvest maps.

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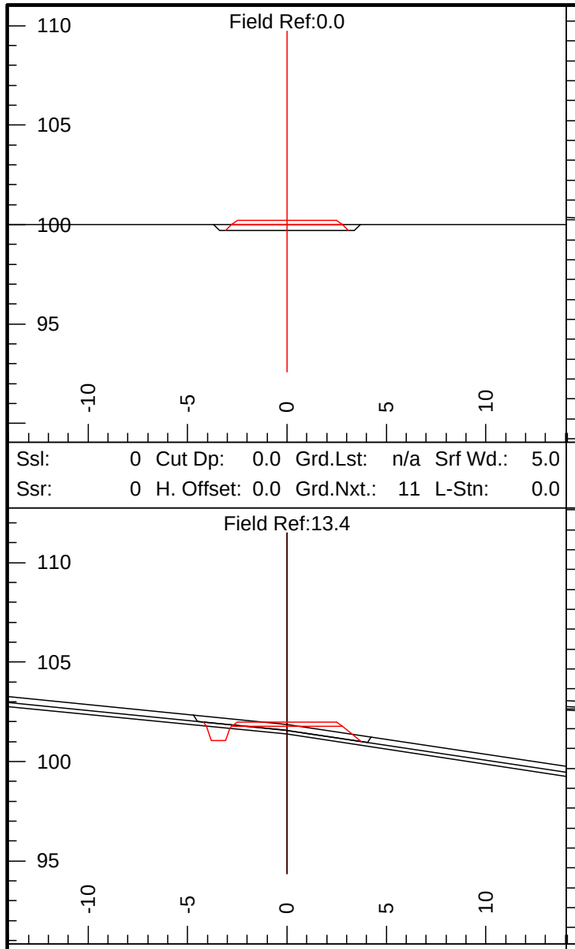
DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

15/12/21

Alberni Valley Community Forest

ROAD: TA568G Cutblock: TS2



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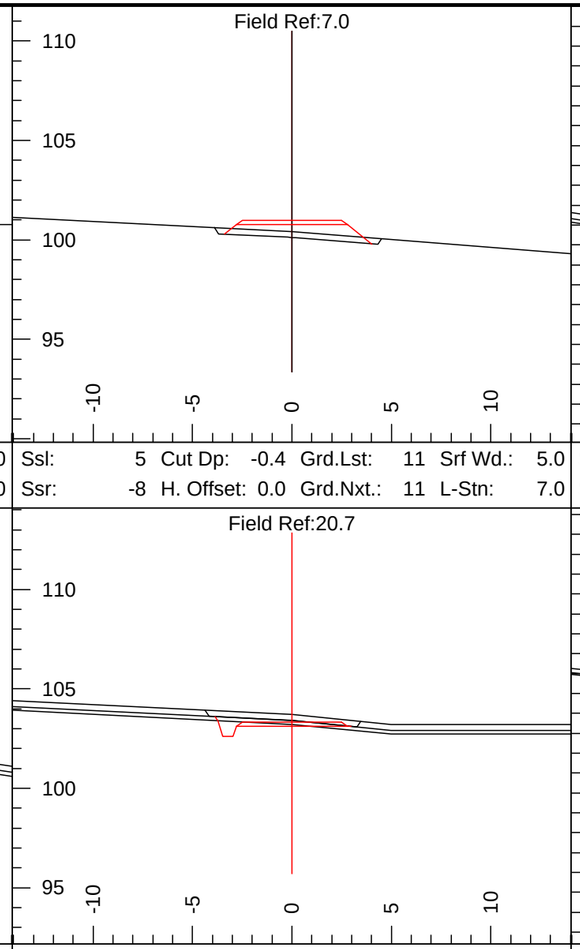
Ssr:	0	H. Offset:	0.0	Grd.Nxt.:	11	L-Stn:	0.0



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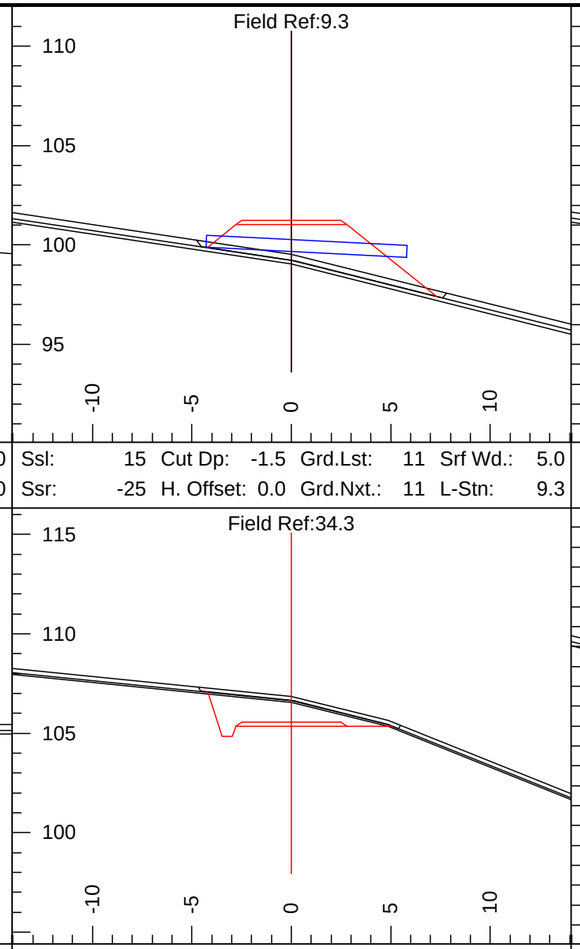

Ssl:	15	Cut Dp:	-1.5	Grd.Lst:	11	Srf Wd.:	5.0
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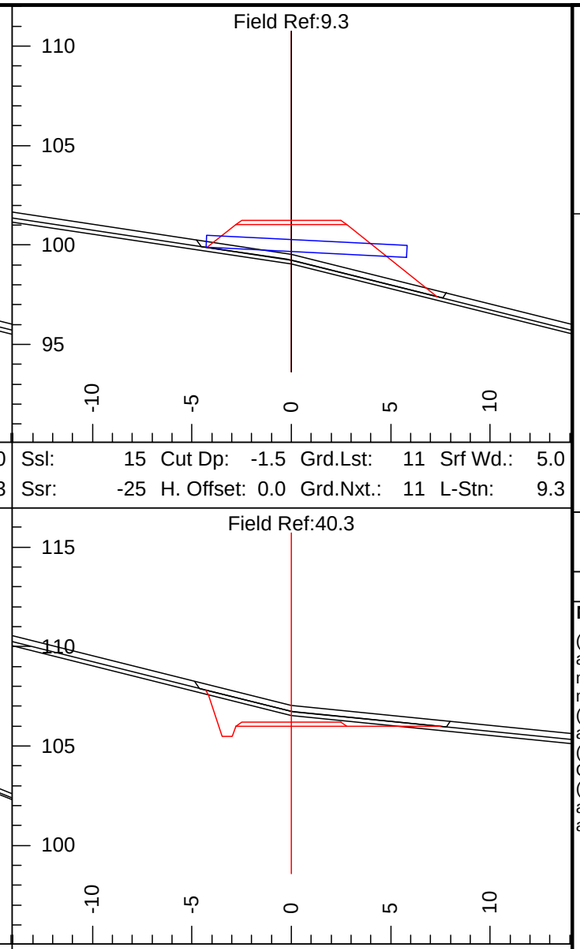

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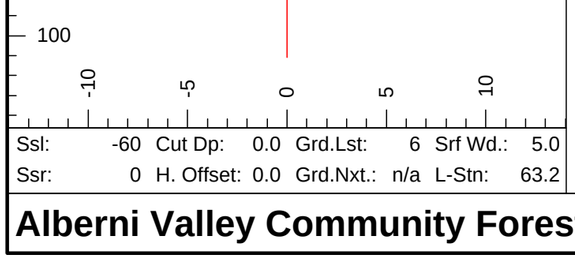

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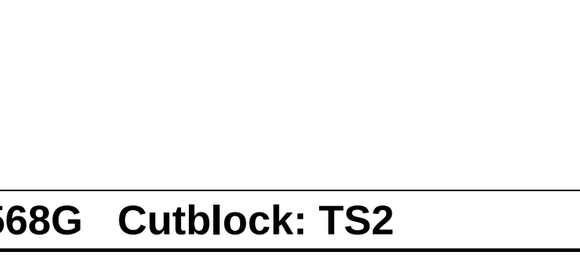
Ssr:	-15	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	13.4

Ssl:	5	Cut Dp:	0.6	Grd.Lst:	18	Srf Wd.:	5.0
Ssr:	-10	H. Offset:	0.0	Grd.Nxt.:	18	L-Stn:	20.7



Ssl:	10	Cut Dp:	1.5	Grd.Lst:	11	Srf Wd.:	5.0
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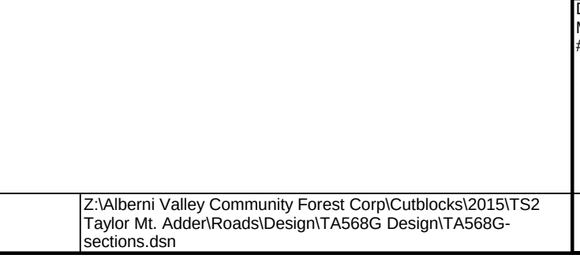

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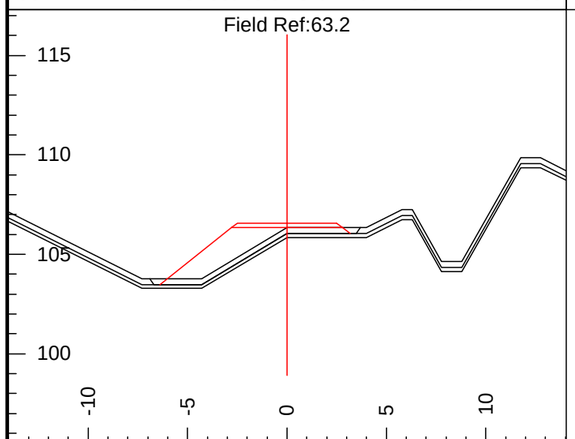

Ssl:	-60	Cut Dp:	0.0	Grd.Lst:	6	Srf Wd.:	5.0
Ssr:	0	H. Offset:	0.0	Grd.Nxt.:	n/a	L-Stn:	63.2

Cutblock: TS2
Road: TA568G

Road Design
0+000 to 0+063

CROSS SECTIONS

Section Scale 1:300

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
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Designed by
Meridian Forest Services
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Coombs BC, V0R1M0
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Alberni Valley Community Forest

ROAD: TA568G Cutblock: TS2

Z:\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\Roads\Design\TA568G Design\TA568G-sections.dsn

15/12/11

P-Stn m.	Field Ref.	Ssl %	Ssr %	Bank Ht. L m.	Bank Ht. R m.	SG Cut V. Cu. m.	SG Fill V. Cu. m.	Strip V. Cu. m.	Mass H. Cu. m.	Lyr1 Gnd	Lyr2 Gnd	Lyr3 Gnd
0.0	0.0	0	0						0.0	BR		
7.0	7.0	5	-8			0.0	22.0	16.1	-22.0	GT		
9.3	9.3	15	-25			0.0	24.8	7.1	-46.7	OB	GT	R1
13.4	13.4	10	-15	0.0		0.5	35.7	12.1	-81.9	OB	GT	R1
20.7	20.7	5	-10	0.3	-0.2	9.7	5.6	17.6	-77.7	OB	GT	R1
34.3	34.3	10	-25	1.5	-0.2	68.1	0.0	26.3	-9.6	OB	GT	R1
40.3	40.3	25	-10	1.6	-0.2	52.9	0.0	17.4	43.2	OB	GT	R1
63.2	63.2	-60	0			65.3	110.5	85.0	-2.0	OB	GT	R1

Cutblock: TS2
Road: TA568G

Road Design
0+000 to 0+063

APPRAISAL DATA TABLE

Notes:

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#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
0.0	0.0	0.0	210	11.5	RP
98.5	98.5	98.5	56	31.0	Crk 4 sta 6

Soil Type Legend

Symbol	Material Type	Cut	Fill
OB	Overburden	150%	100%
GT	Glacial Till	150%	80%
CO	Colluvium	100%	80%
BO	Large Talus / Boulders	100%	100%
BR	Built Road	100%	100%
GF	Glacial Fluvial	80%	80%
W1	Weathered Till <1m	150%	80%
W2	Weathered Till >1m	100%	80%
SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

LEGEND

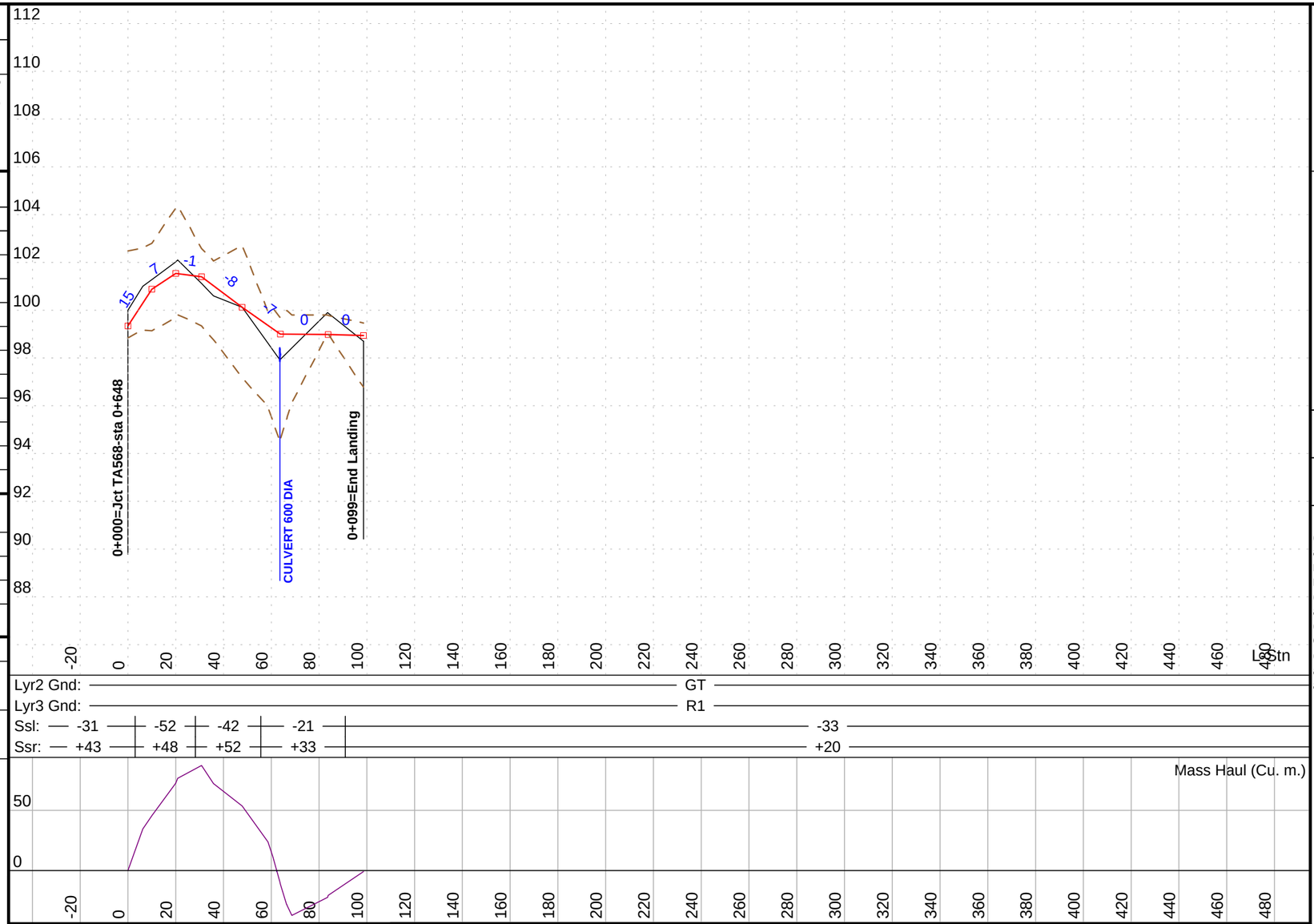
- Profile Subgrade
- Profile P-line Topography
- Profile Slope Stakes
- Culverts

Template Assignments

ID	P-Stn From	P-Stn To	Description
DFWD	..	66.6	Default with Ditch
DF	66.6	..	DEFAULT TEMPLATE

Vertical Curves

K
Len.
Grade in
Grade out



Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
63.6	600	10.0			102	

Cutblock: TS2
Road: TA568H

Road Design
0+000 to 0+099

PROFILE VIEW

Profile Vert Scale 1:200
Profile Horz Scale 1:2000

Notes:

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DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

MERIDIAN Forest Services Ltd.

Alberni Valley Community Forest | **ROAD:TA568H Cutblock:TS2** | \\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\Roads\Design\TA568H Design\TA568H.dsn | 15/12/11 |

Reference Points

P-Stn m.	Field Ref.	L-Stn m.	RS1 Az deg.	RS1 HD m.	RS1 Cmt
0.0	0.0	0.0	210	11.5	RP
98.5	98.5	98.5	56	31.0	Crk 4 sta 6

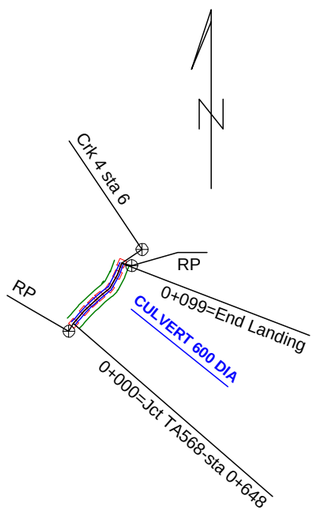
Curve Table

Angle
Tangent
Arc. Len.
Radius
BC Stn.
EC Stn.
Trans. Len.

Template Assignments

ID	P-Stn From	P-Stn To	Description
DFWD	..	66.6	Default with Ditch
DF	66.6	..	DEFAULT TEMPLATE

Overview Map



LEGEND

Plan P-line Topography
Plan L-line
Plan R/W Clearing
Plan Road Edges
Culverts
Reference Point
P-Line Survey Point

Culvert Summary

P-Stn m.	Cul DIA mm.	Cul Len m.	Cul Ht m.	Cul Wd m.	Cul Skew deg.	Cul Cmt
63.6	600	10.0			102	

Soil Type Legend

Symbol	Material Type	Cut	Fill
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W1	Weathered Till < 1m	150%	80%
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SR	Soft Rock - rippable	200%	80%
R1	Medium / Hard Rock na	300%	80%
R2	Medium / Hard Rock pl	300%	100%

Cutblock: TS2
Road: TA568H

Road Design
0+000 to 0+099

PLAN VIEW

Plan Scale 1:2000

Notes:

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\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\Roads\Design\TA568H Design\TA568H-plan.dsn

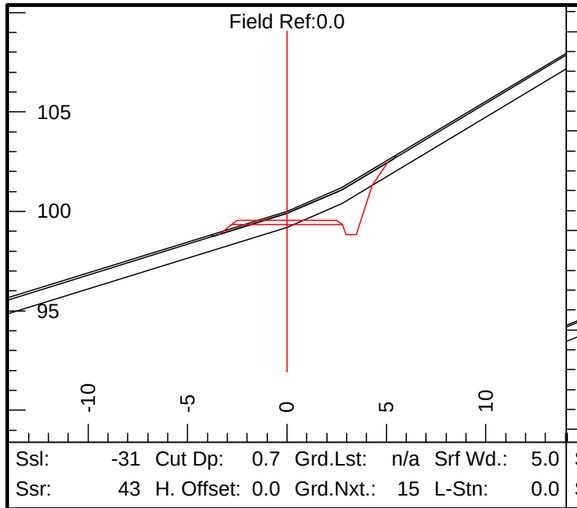
DESIGN SPEED = 20km/hr unless otherwise stated

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Alberni Valley Community Forest

ROAD: TA568H Cutblock: TS2

15/12/21



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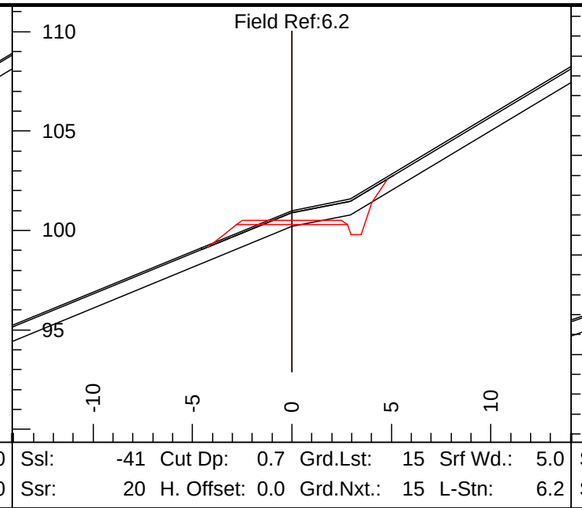

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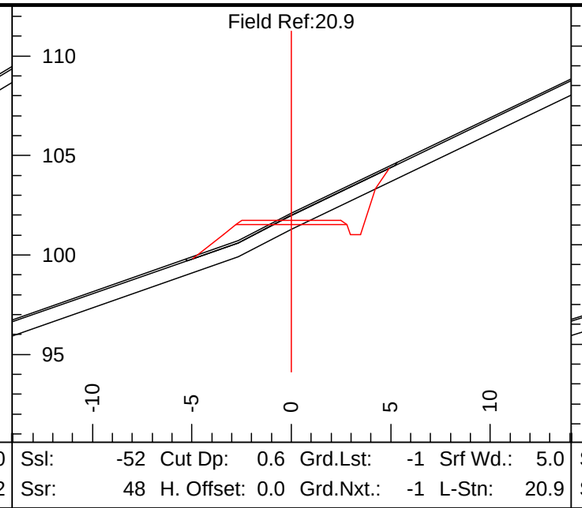

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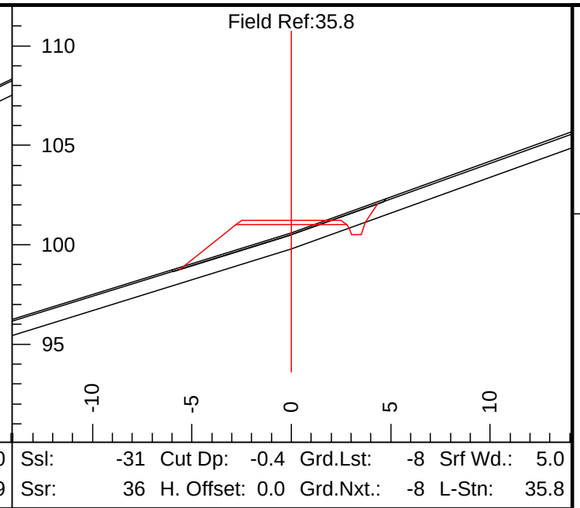
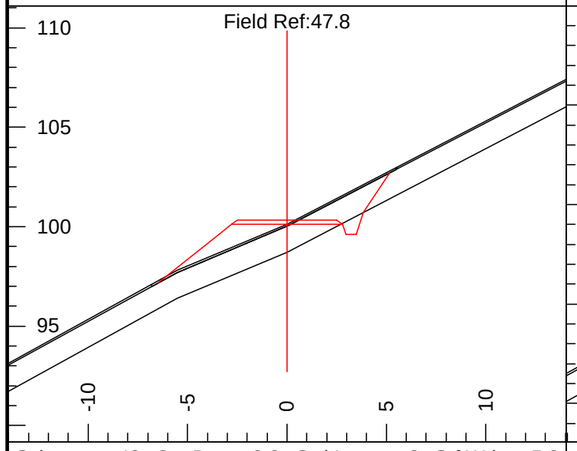


Ssl:	-31	Cut Dp:	-0.4	Grd.Lst:	-8	Srf Wd.:	5.0		
Ssr:	36	H. Offset:	0.0	Grd.Nxt.:	-8	L-Stn:	35.8		



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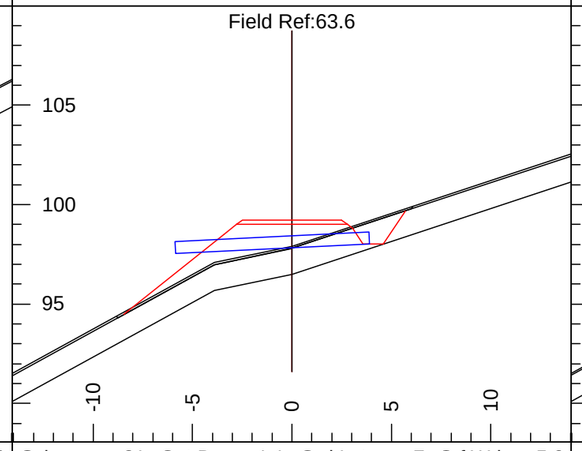
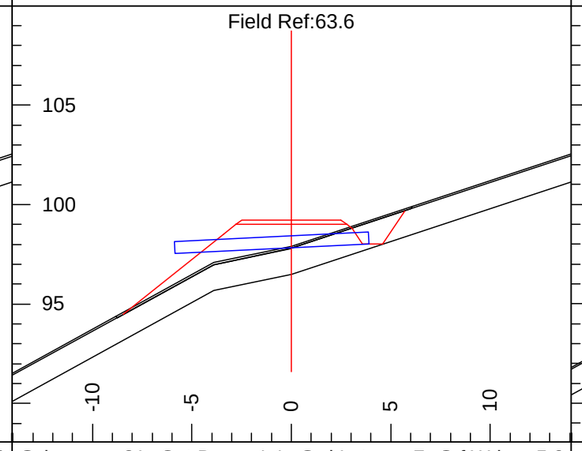
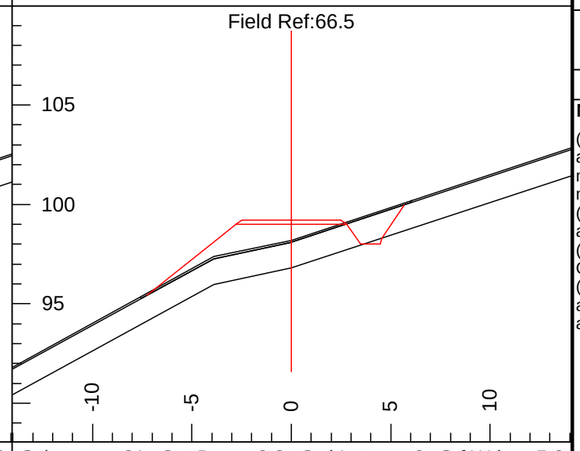


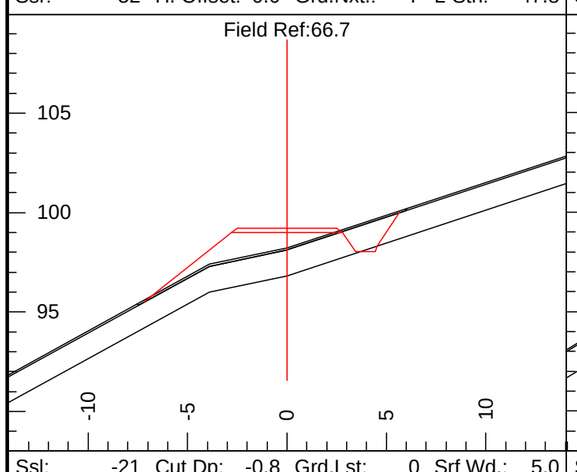
Ssl:	-21	Cut Dp:	-1.1	Grd.Lst:	-7	Srf Wd.:	5.0		
Ssr:	33	H. Offset:	0.0	Grd.Nxt.:	-7	L-Stn:	63.6		



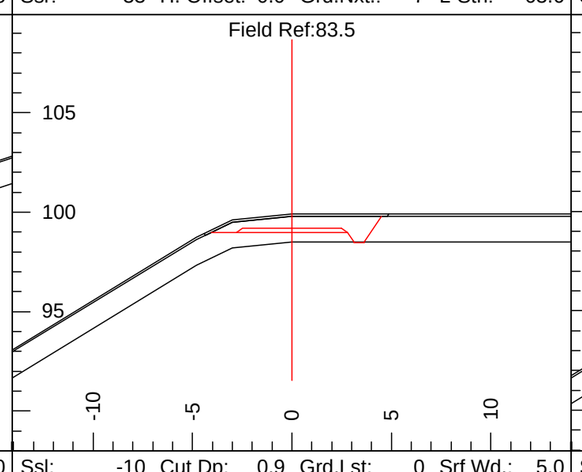
Ssl:	-21	Cut Dp:	-1.1	Grd.Lst:	-7	Srf Wd.:	5.0		
Ssr:	33	H. Offset:	0.0	Grd.Nxt.:	-7	L-Stn:	63.6		



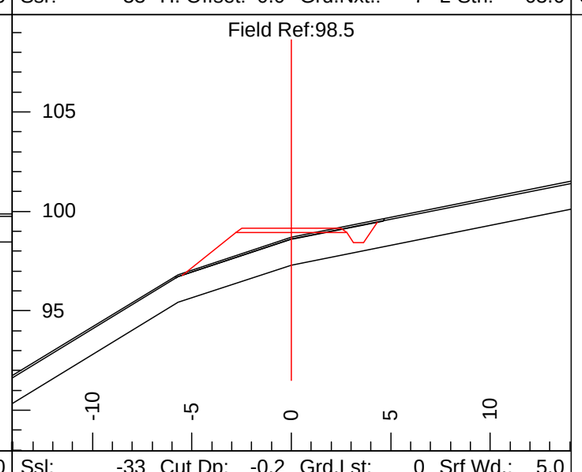
Ssl:	-21	Cut Dp:	-0.8	Grd.Lst:	0	Srf Wd.:	5.0		
Ssr:	33	H. Offset:	0.0	Grd.Nxt.:	0	L-Stn:	66.5		



Ssl:	-21	Cut Dp:	-0.8	Grd.Lst:	0	Srf Wd.:	5.0		
Ssr:	33	H. Offset:	0.0	Grd.Nxt.:	0	L-Stn:	66.7		



Ssl:	-10	Cut Dp:	0.9	Grd.Lst:	0	Srf Wd.:	5.0		
Ssr:	0	H. Offset:	0.0	Grd.Nxt.:	0	L-Stn:	83.5		



Ssl:	-33	Cut Dp:	-0.2	Grd.Lst:	0	Srf Wd.:	5.0		
Ssr:	20	H. Offset:	0.0	Grd.Nxt.:	n/a	L-Stn:	98.5		

Cutblock: TS2
Road: TA568H

Road Design
0+000 to 0+099

CROSS SECTIONS

Section Scale 1:300

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

Designed by
Meridian Forest Services
#15 1010 Shearme Road
Coombs BC, V0R1M0
www.meridianforest.ca

Alberni Valley Community Forest

ROAD: TA568H Cutblock: TS2

\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\Roads\Design\TA568H Design\TA568H-sections.dsn

15/12/11

P-Stn m.	Field Ref.	Ssl %	Ssr %	Bank Ht. L m.	Bank Ht. R m.	SG Cut V. Cu. m.	SG Fill V. Cu. m.	Strip V. Cu. m.	Mass H. Cu. m.	Lyr1 Gnd	Lyr2 Gnd	Lyr3 Gnd
0.0	0.0	-31	43	-0.7	2.9				0.0	OB	GT	R1
6.2	6.2	-41	20	-0.2	2.1	37.6	3.1	5.8	34.5	OB	GT	R1
20.9	20.9	-52	48	-0.2	2.6	69.4	27.6	15.2	76.3	OB	GT	R1
35.8	35.8	-31	36		0.8	49.3	53.5	15.7	72.0	OB	GT	R1
47.8	47.8	-42	52		2.4	36.4	54.7	13.8	53.7	OB	GT	R1
63.6	63.6	-21	33		0.5	39.4	102.3	20.1	-9.2	OB	GT	R1
83.5	83.5	-10	0	-0.2	0.6	65.4	78.3	22.2	-22.1	OB	GT	R1
98.5	98.5	-33	20		0.3	52.8	31.4	14.7	-0.7	OB	GT	R1

ALBERNI VALLEY COMMUNITY FOREST

Cutblock: TS2
Road: TA568H

Road Design
0+000 to 0+099

APPRAISAL DATA TABLE

Notes:

(1) Side Slopes are derived from an average of the first slope % measured off of centerline in 20 meter segments.
(2) Watch for rockfall in steep areas.
(3) Follow BCTS Rainfall Guidelines.
(4) Background information is approximate. Refer to construction and harvest maps.

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MERIDIAN Forest Services Ltd.

Alberni Valley Community Forest

TA568 ROAD RECONSTRUCTION PRESCRIPTION

Prepared by:	Darin Brown, Meridian Forest Services Ltd.
Assessment date:	September 3rd, 2015 – Carsten Durkop, Meridian Forest Services Ltd.
Standard:	TA568 will be reactivated to hauling status. Recommended actions are to be completed to the required road building standards as defined in the *Forest Engineering Guidebook, 2002.*
Road Section:	The Point of Commencement (P.O.C) for the TA568 Reconstruction Plan is at Station 2+209, at the junction of TA568D Station 0+000
Safety:	Supervisors are required to read and understand findings, recommendations and safety concerns of any report, including this report. Prior to start-up this information must be reviewed, discussed and recorded with the construction crew during the Pre-work inspection. Some general safety notes are: • There is no industrial activity and log or equipment hauling in this area. • Radio communication is on the Sproat Lake repeater. The onsite construction crew may also communicate on their own frequency. The radio frequencies and contact information must be reviewed with all of the construction crews and recorded in the Pre-work inspection report prior to the reconstruction start-up. Any additional construction crews working on the site must also be informed of the correct radio frequencies and procedures. • Due to the location of the road within the Sproat Lake community watershed, Coastal Rainfall Shut-down Guidelines must be strictly adhered to. The reactivation crew must ensure they minimize the amount of sediment entering watercourses. They should also be aware that periods of intense precipitation may cause instability in freshly excavated cutbanks / fill slopes, even prior to reaching shutdown guidelines. Best practices are to shut down if drainage systems are overflowing or if surface sediments are saturated.
General Notes:	All the culverts mentioned in this report are field referenced with pink culvert ribbons. See accompanying map for station locations and points. Construction prescriptions were marked in the field White and Green Ribbon with stations, see accompanying map for prescriptions and this report. The ditching/brushing prescriptions can be modified or added to at the discretion of the machine operator. Some of the material in the ditches are ideal for road surfacing and may be utilized on the road. All operations are located within the Sproat Lake Community Watershed. All streams are none fish, but have appropriate riparian reserves setbacks as if as fish streams.

Alberni Valley Community Forest

TA568 RECONSTRUCTION – DETAILED PRESCRIPTION

Start Station	End Station	Dist. (m)	Station In Field	Action	Comments
2+209			1		The Point of Commencement (P.O.C) for the TA568 Reconstruction Plan is at Station 2+196, at the junction of TA568D Station 0+000
2+209	3+099	890	1-14	BRUSHING	Brushing is prescribed for the entire reconstruction length, but the amount of brushing required will fluctuate over this stretch of road.
2+226			2	Install 600mm CMP	Cross Drain. No Stream. Old rotten 0.5 x 2.0m WBC.
2+403			3	Install 600mm CMP	Cross Drain. Replace old 1 x 3.0m hemlock WBC. 
2+663			4	Install 600mm CMP	Cross Drain. No Stream. Old rotten 0.5 x 2.0m WBC.
2+794			5	Remove 10m of reactivation material	There is capping material which was removed from the deactivation of the WBC on Stream #5 and spoiled on the fill slope. Remove the material to the designated spoil site at Spur 1. 
2+794	2+804	10	5	WIDENING	Narrow running surface due to deactivation material spoil don fill slope of the road.
2+800			6	Install 600mm CMP	Cross Drain. No Stream. Plugged 600mm CMP.

					
2+811			7	Remove old WBC structures	There are old sills and stringers on the road due to the deactivation of the WBC on Stream #5. Remove the material to the designated spoil site at Spur 1. 
2+830			8	Start of reconstruction	Large fill required.
2+840			9	Install 1200mm CMP	S3 Stream.
2+843			10	End of reconstruction	Large fill required.
2+903			11	Install 800mm CMP	S4 Stream.
2+944			12	Install 1x5m WBC	Stream #5 (S3) 
2+997			13	Install 600mm CMP	Cross Drain. No Stream.
3+099			14		The Point of Termination (P.O.T) of the TA568 Reconstruction Plan. Point of Commencement (P.O.C.) of new construction Station 0+000 of TA568J

Alberni Valley Community Forest

Action	Culvert Size	Length (m)	Number of Units
Install	600mm CMP	10	5
		12	
	800mm CMP	10	1
		12	
	1000mm CMP	10	
		12	
	1200mm CMP	10	1
		12	
	1m x 5m WBC	~	1
Brushing	TA568	875m	Brushing as required, Amounts will fluctuate.
Ditching	TA568	~	Minor ditch cleaning throughout.
Widening	TA568	10m	
Resurfacing/Reconstruction	TA568	13m	
Grading	TA568	~	Grading may be required after road rehab is complete.

Appendix 3.5: Log Culvert Design

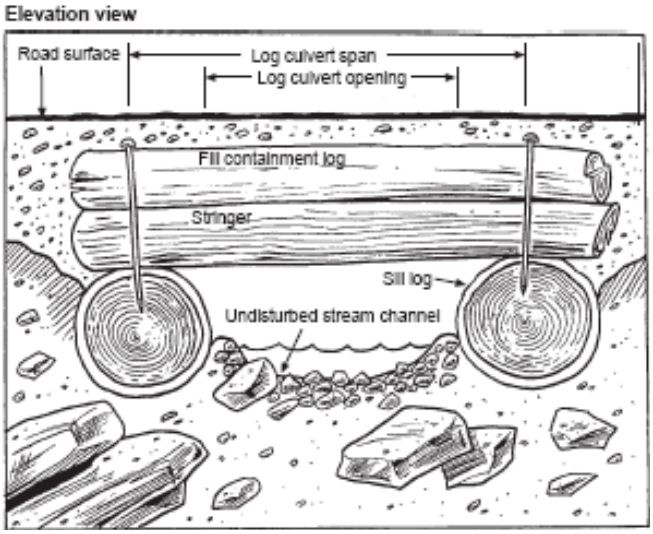
Terminology

For the purposes of this manual, the term "log culvert" is interchangeable with "woodbox culvert," "log stringer culvert," or "wood stringer culvert."

Definition: Log Culvert

A log culvert is a log crossing structure having a span of less than 6 m centre-to-centre of bearing, and an abutment height (if constructed as a log crib) of less than 4 m between the underside of the lowest crib log to the underside of the stringers, and is used to carry ephemeral or perennial stream flow in a stream channel from one side of a road to the other. A log culvert structure is covered with soil and lies below the road surface (Figure 3-14).

Figure 3-14 Simple log culvert



Notes Figure 3-14:

- Opening size: passes peak flow for 10-year or 100-year return period, (depending on the anticipated time that the log culvert will remain on the site) plus minor debris.
- Road width: varies with road curvature.
- Log culvert length (as measured parallel to stream): varies with road width, height and type of fill, culvert gradient and skew.
- Sill logs: place outside the stream channel width and below scour level: species can vary. Use minimum diameter of about 300 mm; long enough to support stringers, fill containment logs, and road fill.
- Non-woven geotextile (filter cloth).
- Stringers (puncheon): match in diameter and taper, and be free of decay and excessive crook or sweep; spiral grain should be less than 1 in 8. Knot size in middle is less than 125 mm. See Table 3-8 for sizing.

- Fill containment logs: minimum diameter 400 mm. See Figure 3-15. If lashing is used, inset the cable to protect it from damage by road maintenance equipment.
- Connections:
- Stringers to sill; 12 mm spiral drifts
- Fill containment log to sill: 19 mm spiral drifts or four wraps of 19 mm diameter 6 x 9 fibre core wire rope
- Inlet control: place shot rock to protect against fill erosion below the design flood level.
- Outlet control: place rock as required to prevent outlet scouring and undermining of the sill logs.
- In the case of a skewed log culvert, measure the span of the stringers for design purposes from bearing to bearing along the stringers and not at right angles to the sill logs.

Consider log culverts for:

- streams where other resource agencies require the culvert to be open bottomed; and
- steep gradient streams.

Where the planned service life of the road is less than the life expectancy of the drainage structure components, consider using log culverts:

- as temporary structures on tote roads or pilot trails;
- on roads where ongoing minor debris problems are anticipated; and
- on permanent roads as temporary drainage structures at the clearing or subgrade construction stage, until the permanent drainage structures are installed.

Ensure that a log culvert design addresses the following:

- opening size for design flow and debris management;
- culvert length and fill and surfacing requirements;
- superstructure design (stringer or puncheon sizing);
- substructure design (sills, mud sills, and foundation logs); and
- inlet and outlet protection requirements.

Log culvert opening size

To meet current legislative requirements, design a log culvert to pass the highest peak flow of the stream that can reasonably be expected within the following return periods specified below for the length of time it is anticipated that the log culvert will remain on site (see FPPR section 74). For methods to estimate the value of Q_{10} and Q_{100}, design discharge of a creek see Figure 3-3: High water estimation method for stream culverts in this chapter and Chapter 4.8: Design Discharge Criteria.

Table 3-8 Peak flows for various log culvert lifespans

Anticipated period that the log culvert will remain on the site	Peak flow return period
For a log culvert that will remain on site for up to 3 years	10 years (i.e., Q_{10})
For a log culvert that will remain on site for over 3 years	100 years (i.e., Q_{100})
For a log culvert within a community watershed that will remain on site for over 3 years	100 years (i.e., Q_{100})

A log culvert is a type of open bottom structure, designed to span the stream channel width. This is particularly important on fish-bearing streams to avoid impacts on fish habitat and fish passage (refer to the section on "Open bottom culverts" in the Fish-stream Crossing Guidebook page 6).

In addition to passing the required peak flow discharge, design log culverts to manage anticipated debris. Options may include, but are not limited to:

- increasing the opening size (height and/or width);
- allowing debris to pass over the approaches;
- trapping debris with a specially fitted trash rack or other device; and
- combining these and other options.

Inspect debris catchment devices frequently and clean them as required. The criteria for design of any debris catchment device are site-specific and may incorporate professional input. Identify debris problems from terrain hazard maps, air photo interpretations, field investigations, and reports for the area (see the Gully Assessment Procedure Guidebook).

The convention for specifying the opening size (inside measurements) of a log culvert is height (vertical distance between the deepest point along the channel floor and the soffit of the stringers) followed by the width (horizontal distance measured at right angles between the inside face of the sill logs).

Log Culvert Length

Culvert length, as measured in the direction of the stream, is determined by the following:

- road width;
- depth of road fill over the log culvert, and fill slope angles;
- type of fill over the log culvert;

- inlet and outlet treatments;
- culvert gradient; and
- culvert skew.

Road Width

If the culvert is located within a horizontal curve, provide for extra road width to accommodate side tracking of logging trucks and hence additional culvert length. The required width can be found in Table 3-3: Curve widenings.

Depth of Road Fill

Road fills greater than 2 metres on top of the log stringers should generally be avoided. Should a failure occur, there is a potential for large volumes of sediment-producing materials to enter the stream channel. In addition, deep fills make culvert replacement, repairs or even inlet clean-out difficult. For fills anticipated to exceed depths of 2 metres, ensure that a professional engineer has been consulted or a design table produced by a professional engineer which captures the fill depth is used.

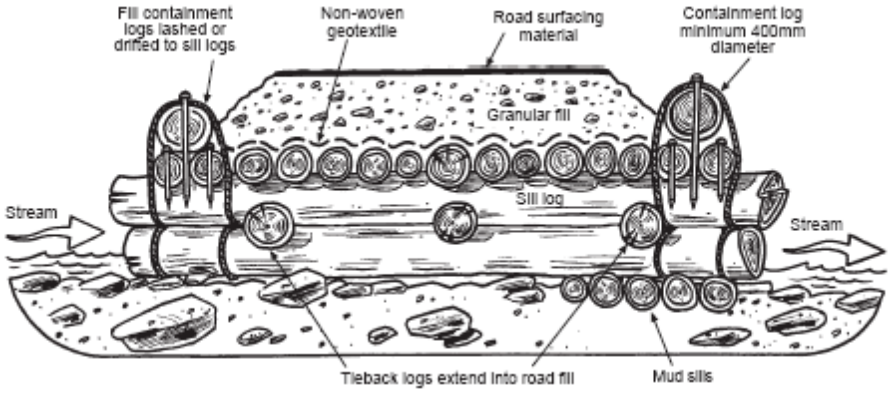
Measures to reduce road fill depth include:

- use of a longer span culvert, or a bridge for V-shaped channels;
- increasing the culvert height, by use of log cribs; and
- relocation of the road to a more suitable crossing.

Ensure that log culverts are sufficiently long to contain the fill and prevent material from entering the stream. As the fill height increases for a given roadway width, increase the culvert length.

Incorporate road fill containment measures into the design. This can be achieved by making the culvert extra long (at least 1 m per side beyond the toe of the road fill) and securing a large containment log (at least 400 mm diameter) at the toe (Figure 3-15.).

Figure 3-15 Fill containment for log culvert



In addition, include provisions that prevent road fill materials from encroaching on the design peak flow discharge flood level. For fills up to 1 m thickness, use the sill logs—provided they are long enough—for this purpose. For higher fills, incorporate other site-specific measures into the design.

Type of Road Fill

To maximize fill slope angles and minimize culvert length, use shot rock or granular pit-run material for the fill material placed over a log culvert. Avoid the use of silty and clayey materials because these materials require flatter fill slope angles (and therefore longer slope lengths) to maintain fill slope stability, and increase the potential for sedimentation.

Log Culvert Gradient

For stream gradients less than 10%, place the stringer soffit (culvert soffit) at 0% grade or at or near the same gradient as the stream. Should the proposed culvert soffit gradient (not the stream channel gradient), exceed 10%, then apply other structural considerations.

Channel Gradients Less than 10%

A cross-sectional sketch of the culvert, the fill, and a profile of the stream bed provide the best tools for determining log culvert length. Measure the required length directly from a sketch drawn to scale.

Channel Gradients Greater than 10%

Measure the length directly from the cross-sectional sketch for the stream.

Inlet and outlet treatments

Incorporate headwalls or sill logs into log culvert design, allowing vertical end fills and therefore reduced culvert length.

Length for skewed culverts

Where a culvert crosses the roadway at other than a right angle to the road centreline, allow for the increased culvert length caused by this skew.

Log culvert stringer selection

Stringer sizing involves selection of the appropriate log diameter and species to be used for the stringers. Table 3-9 is an example of a log stringer sizing table developed by a professional engineer. Table 3-9 presents stringer sizing for log culverts, as a function of span (see Figure 3-15), total fill depth, logging truck axle loads (e.g., L75), and log species. In this professionally engineered table, the total fill depth is the combined thickness of road surfacing and underlying road fill materials that extend down to the top of the stringers. The log diameters given in Table 3-9 are minimum mid-diameters, which are measured at mid-span under the bark. The total fill depth ranges from a minimum of 300 mm to a maximum of 2 m for this table.

If the design discharge is 6 m^3/sec or greater, or the road fill depth is greater than 2 m, ensure that a professional engineer has been consulted or a design table produced by a professional engineer which captures the fill depth is used.

Use oversize logs to account for unseen flaws, to give added strength for overloads and general heavy use, and to extend the service life of the structure. For maximum service life, use sound western red cedar. Fill containment logs contain the fill or road surfacing and can be structural or non-structural. Firstly, place a geosynthetic over the stringers to prevent surfacing or fill material from migrating between the stringers and into the watercourse.

Log culvert substructure design

The substructure required depends on the bearing capacity of the foundation soils and the length and diameter of the logs available. Choice of substructure is based on an estimate of the bearing strength of the soil at the site. From this, determine the diameter and length of the logs needed to support the design loads. Refer to FPInnovations' Log Bridge Construction Handbook (1980) for a detailed explanation of this topic.

Single sill logs

Use single sill logs as culvert foundations if the ground is firm and the sill log provides sufficient clearance for the design flood and debris passage. Use a minimum diameter for sill logs of about 300 mm. For short service-life culverts (planned for less than three years use), almost any species of wood will suffice for the sill logs, provided it is sound throughout. However, it is very important that the anticipated life-span of the road be well thought-out. If there is a good chance that the life of the road will be extended, design and construct a culvert with a longer service-life.

The expected service life for sill logs is as follows (subject to site-specific soil and climatic conditions):

- Cedar (sound, with preservatives applied to cut surfaces): 20 years plus;
- Douglas-fir: 8-10 years;
- Spruce, hemlock and balsam: 4-6 years; and
- Hardwood species: Variable but assume it is less than four (4) years.

Table 3-9 Log culvert stringer sizing table--log diameters are mid-diameters in millimetres

SPAN (metres)	**TOTAL FILL DEPTH** (metres)	**L75 D. Fir**	**L75 Other**	**L100 D. Fir**	**L100 Other**	**L165 D. Fir**	**L165 Other**
1.5	0.3	250	275	250	325	350	450
	1.0	250	225	225	250	250	300
	2.0	250	250	250	250	250	275
3.0	0.3	375	475	400	475	650	800
	1.0	275	300	275	325	350	400
	2.0	275	325	300	350	375	450
4.5	0.3	500	625	575	675	700	825
	1.0	350	425	375	475	500	600
	2.0	400	475	425	475	525	625
5.9	0.3	600	725	650	775	800	950
	1.0	450	550	500	575	600	750
	2.0	500	625	525	650	625	825

Notes Table 3-9:

1. Other refers to cedar, spruce, lodgepole pine, Jack pine, and hemlock.

2. Sizes are based on sound logs, with no allowance for decay.

3. Logs should be free of cracks, excessive taper, sweep, damage, or large knots.

4. Reverse the taper of adjacent logs.

5. Spans over 3 m should be lashed at mid-span.

6. Logging truck axle loads in accordance with B.C. Ministry of Forests, Lands and Natural Resource Operations standards.

7. Axle loads allow for unbalanced 60%-40% wheel loading.

8. Ensure that fill depths greater than 2 metres are designed by a Professional Engineer, or designed from tables prepared by a Professional Engineer.

Mud Sills

If the natural ground will not support the culvert loads on a single sill log, increase the load-bearing area with the use of mud sills. These are short logs, 250 mm (or larger) in diameter, and 1 to 6 m in length, placed at right angles under the sill log for the entire length of the sill.

For crossings on soft ground, on non-fish bearing streams, another option is to extend the mudsills completely across the channel to and beneath the other sill log. This increases the stability of the structure. It is important that the mudsills be placed below the scour level.

Log Culvert Inlet and Outlet Protection

Where the sill logs for log culverts are placed outside the stream channel and bedded below scour level, do not provide for additional inlet and outlet protection. If there is a concern about erosion around the inlet or outlet, protect any erodible surfaces with rock to a level equivalent to the design flood. Provide at some sites an individually designed settling or debris catchment basin at the inlet.

Inlet Protection for Cross-Drain Log Culverts

Inlet protection for cross-drain log culverts will normally be achieved with a ditch block to ensure that ditchwater is directed into the log culvert and not past it. In most cases, use a catch basin to trap sediment and debris. For cross-drain culverts on a steep road grade, consider lining the ditch block, catchment basin, and the bottom of the channel with rock to minimize scouring.

Outlet Protection for Cross-Drain Log Culverts

Do not consider placing log culverts on top of erodible fills. Direct ditch flows onto erosion-resistant areas or onto outlet protection such as flumes or riprap aprons. Do not direct ditch water flows onto unprotected sidecast material unless it is composed of rock or other erosion-resistant materials. On steeper slopes, erosion control at the culvert outlet is a design challenge. One option is to provide extensive outlet protection down the slope to an erosion-free area.

CUTBLOCK AND ROAD SITE PLAN

CUTBLOCK IDENTIFICATION				
Licence: K2D/AVCF	Cutting Permit: 009	Block: TS2	Timber Mark K2D009	FDU: B (Taylor)
Silviculture System: Retention	Opening Number: 92F.024	Location: Klitsa Trail	Lattitude: 49° 16' 32"	Longitude: 125°20' 01"
TAUP(ha): 13.3	NAR (ha): 9.9	Retention (ha): 2.3	NP UNN (ha /%): 1.1	P.A.S. Limit (%): 8.5

Road Name	Section	Length	Location
TA568	2+209 to 3+099 Case 1 Reconstruction	890 m	Taylor
TA568G	0+000 to 0+063 New Construction	63 m	
TA568	0+000 to 0+888 New Construction	888 m	
TA568H	0+000 to 0+099 New Construction	99 m	

SOIL DISTURBANCE				
SU	Compaction	Displacement	Surface Erosion	Soil Disturbance Limit (%)
1	High	Very High	High	5
2	High	Moderate	High	5

COMMENTS

The block has been designed for a helicopter & cable yarding harvest system. The existing road TA568 will be used a helicopter drop zone. The road surface and R/W may be used for landing wood.

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

Soil displacement is VERY HIGH due to the steep slopes.

Maximum roadside soil disturbance =25%

CUTBLOCK AND ROAD SITE PLAN

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 where OGMAs were established on July 18, 2005. • OGMA NAN_splk_54 is located directly adjacent to the proposed harvest area but does not encroach onto it. OGMA NAN_splk_11 is located to the west of the proposed harvest area. Permissible activities that may occur for NAN_splk_54 include: ○ removal of danger trees, or brushing and clearing within the right-of-way on existing roads for safety purposes, ○ felling of trees for guyline clearance, tailhold anchor trees, (except high value wildlife trees) or danger trees along cutblock boundaries or within the right-of-way on new road/bridge alignments to meet safety requirements, ○ The AVCFC may carry out boundary pruning of trees within the OGMA. • No replacement OGMA is needed since there are no known OGMA infringements.
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 1.1 ha (8.2%) WTRA (based on TAUP) has been retained adjacent to the block, meeting minimum requirements set out in the approved Sproat Lake Landscape Unit Plan for areas within the CWH mm (7%) amd CWH vm (5%) BEC subzones. This WTRA contains old growth Hw, Fdc Cw, representative of the pre-harvest stand. • AVCF will ensure that the 5 year average of WTRA will met the minimum requirements set out in the approved landscape unit plan for areas within the CWH mm & CWH vm BEC subzones by ensuring that each individual block meets this target. • AVCF will ensure that the WTRA are distributed across the landscape by ensure that each WTRA 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, ○ WTRAs with a high likelihood of windthrow may be pruned or topped to maintain the integrity of the WTRAs.
5.1.1b Order Establishing Sproat Lake Landscape Unit and Objective – Objective 3: Special Management Zone 17 (SMZ 17)	• The proposed harvest area is within SMZ 17 of the Sproat Lake Landscape Unit • Sustain forest ecosystem structure and function within the portion of Special Management Zone 17 located in the Sproat Lake Landscape Unit, by retaining mature and old forests (i.e. >80 years of age) on an area covering at least 25 per cent of the total forested area of the SMZ portion located within the landscape unit. • The strategy is consistent with AVCF Management Plan objectives and strategies for landscape level biodiversity (S 13.3.9.2).
5.1.2a Vancouver Island Land Use Plan Higher Level Plan Order – Objective 1a: Sustain forest ecosystem structure	• The proposed harvest area is within SMZ 17. • Sustaining forest ecosystem structure and function in SMZ 17 as per VILUP Objective 1a) will be managed as per the strategy for Objective 3 of the Sproat Lake Landscape Unit Plan, included in section 5.1.1 of the FSP.

CUTBLOCK AND ROAD SITE PLAN

and function in SMZs	
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 is within SMZ 17. • The proposed harvest area is designed in a manner that is consistent with retaining structural forest attributes and elements with important biodiversity functions that exist in the established WTRA and Timbered Leave Areas (TLA). These retention areas contain old growth HwFdcCw, representative of the pre-harvest stand and will maintain functional biodiversity within the retained forest.
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 is within SMZ 17 where a retention silviculture system is required for cutblock (harvest) areas greater than 5 ha. The NAR of the proposed harvest area is 9.9 ha over three separate polygons. The southern polygon (6 ha) will be harvested using a retention silviculture system where a retention system is defined as retaining "individual trees or groups of trees to maintain structural diversity over the area of the cutblock for at least one rotation" and to maintain > 50% Forest Influence. Pre-marked individual and small groups of trees are to be reserved from harvest in the southern polygon and must be representative of the existing stand, dominant or co-dominant, and be of good form and vigour. The Forest Influence criteria has been achieved at a total of 64%.
5.1.2d Vancouver Island Land Use Plan Higher Level Plan Order – Objective 2.	• The proposed harvest area is within SMZ 17, however this objective is not applicable since this block is not intended to to recover timber damaged by fire, insects, wind or other similar events.
5.2.1 Soils (FPPR s.35-36)	• Soil disturbance limits comply with Section 35 & 36 of the FPPR. Limits are listed in SOIL DISTURBANCE section of the Site Plan. • Permanent access structures comply with Section 36 of the FPPR. Permanent access structures for the development are 8.5%. The area occupied by permanent access structures exceeds 7% due to the size, topography and engineering constraints of the cutblock and safety of road users. The permanent access structure limit is exceeded by as little as practicable.
5.2.2 Wildlife – MAMU (FPPR s.7)	• The cutblock will not affect Class 1, 2 or 3 Marbled Murrelet (MAMU) habitat in the non-contributing landbase. There are no Wildlife Habitat Areas (WHA) for MAMU within the immediate vicinity of the cutblock.
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). • There are no wetlands or lakes, in or adjacent to the harvest area.

CUTBLOCK AND ROAD SITE PLAN

5.2.4 Community Watersheds (FPPR s.8.2)	• The proposed harvest area is within the Sproat Lake Community Watershed. • The recent CWAP "Sproat Lake Watershed Assessment Update Final Report" by Warren Cooper RPF (March 22, 2013) reported an Equivalent Clearcut Area (ECA) of 13% for the Sutton sub-basin. As per the FSP Subsection 1, in respect of FPPR S 8, the AVCFC will adopt as a result/strategy FPPR S 59 (protecting water quality), S 60 (licensed water works) and S 61 (excavated or bladed trails). • 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 NAR is less than 40 ha (9.9ha) and is not considered adjacent to any existing non-greened up cutblocks. This is in accordance with the result or strategy adopted by the FSP and FPPR Sections 64 & 65 with respect to maximum cutblock size and adjacency.
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)	• The proposed cutblock is located in the asserted traditional territory of the Hupacasath and Tseshaht First Nations. AVCFC, as the holder of the FSP under which this cutblock is subject to, is solely responsible for First Nations consultation and must be completed prior to Cutting Permit advertisement/award. • If, during harvesting, any evidence of traditional use or cultural heritage values is found notify the AVCF Manager and the Ministry of Forests Aboriginal Liaison Officer and cease work within a 30m radius of the area.
5.3.1 Visual Quality Objectives (FPPR s.7 – GAR Order)	• The development area overlaps with a polygon with Visual Quality Objective of Partial Retention. A Visual Impact Assessment completed by Olak Visuals in October 2015, shows that the development will remain within the required visual quality objective for the area.

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			
1	1028537	7.2	CWH	mm	1	$01_{50}03_{25}05_{25}$	Plant	Cw Fd	Hw
2	1028545	2.7	CWH	mm	2	$01_{75}03_{25}$	Plant	Fd[10] Cw Hm[12] Yc Hw	Ba

([10]) Restricted to southerly aspects. ([18]) Restricted to Trial Use

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)	
1	6	11	2.0	900	500	400	Hw Cw Fd	2.0 1.5 3.0	150
2	6	11	2.0	900	500	400	Fd Hw Cw Yc Ba Hm	2.25 1.0 1.0 1.0 1.75 1.25	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.

Windthrow: A windthrow assessment was completed by Meridian Forest Services in August 2015. Block TS2 has been assessed as having a LOW windthrow risk. The windward edges of cutblock TS2 are mostly sheltered by bluffs controlling the upper boundary line. Remaining timber along the windward edges will experience minimal windthrow well within the acceptable level of damage (10-70% within 1 tree length). No windfirming treatment is required.

Terrain Stability: A final Terrain Stability Report was completed by Jack Whittles, P.Geo, in September 2015. The proposed cutblock was assessed as having VERY LOW to LOW likelihood for post-harvest landslides with the exception of two terrain units with a moderate risk of post harvest landslides. Three sections of along proposed Road TA568 will required Full Bench Endhaul to reduce the potential for Fillslope failures to LOW. No boundary changes were required. Workers should be made aware of the extreme potential for rockfall to occur from directly upslope of this area.

Recreation: The southwest boundary of the largest polygon borders an unmaintained hiking trail with access to Mt Adder. The majority of the trail is located outside TS2 within the existing cutblock and the legal OGMA. However, there is approximately 100 m of trail is located within the proposed cutblock. Harvesting will not impact recreational opportunities since the maintained Mt Adder Trail has been re-located to the east with access through TS1.

Root Rot: No significant root rot infection centres were identified in this block during fieldwork. Endemic spot infections may exist but no treatment is prescribed.

Coarse Woody Debris: Coarse woody debris will be left on site to meet biodiversity targets. As per FPPR section 68, 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: A WTRA totaling 1.1 ha has been designated for TS2. This is equivalent to 8.1% of the TAUP and is located between FC 28 to FC 32 within the legal OGMA (NAN_splk_54).

Invasive Plants: 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.

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

Regeneration: Plant promptly following harvesting to minimize the potential need for future brushing treatments. Focus Cw on water receiving sites. Block TS2 has a low brush competition hazard.

CUTBLOCK AND ROAD SITE PLAN

Recommended Planting Prescription:

SU	NAR (ha)	Species	Percent (%)	Stock Type	Stems/ha	Total Stems
1	7.2	Fd Cw	70 30	315A or smallest available	700 300	5040 2160
2	2.7	Yc Ba Cw	20 60 20	315A or smallest available	200 600 200	540 1620 540
A more detailed planting prescription is to be completed during the Post-Harvest Assessment.						

RIPARIAN MANAGEMENT

Riparian ID	Riparian Class	Riparian Reserve Zone Width (m)	Riparian Management Zone Width (m)	Riparian Prescription
1	S4	0	30	FA/YA/NX/NC
3	S2	30	20	FA/YA/NX/NC
4R1	S3	20	20	FA/YA/NX/NC
4R2	S4	0	30	FX/YA/NX/NC
4A	NCD	0	0	FX/YX/NX/NC
4B	S4	0	30	FX/YX/NX/NC
4C	S4	0	30	FX/YX/NX/NC
5	S3	20	20	FA/YX/NX/NC
6	S4	0	20	FA/YX/NX/NC

The proposed cutblock TS2 is located within the Sproat Community Watershed, where all streams within and surrounding the proposed cutblock are classified as non-fish S2, S3 or S4 streams as per the Forest Planning and Practices Regulation (FPPR) s. 47(2). However, provided a written rationale prepared by a qualified professional considers the Factors in Schedule 1, Section 2 of the FPPR, a variance to harvesting within the RMAs is permitted. The proposed cutblock is located approximately 1.5 km upstream from Sutton Creek, which drains into the Taylor River which eventually enters Taylor Arm at the western most point in the watershed. The nearest licensed waterworks feature is located on the eastern side of Sproat Lake. Therefore, the role played by trees and understory vegetation in conserving water quality and the need to maintain stream bank and stream channel integrity, and the relative importance and sensitivity of different riparian classes of streams is VERY LOW considering the remoteness of the streams in relation to Sproat Lake and the high level of lake buffering to the nearest waterworks feature. The harvest activities are anticipated to be relatively short lived, be of low intensity, and are not expected to affect the water quality of any of the streams. All streams are not temperature sensitive and therefore, are not to play a role in forest shading. Therefore, The RMA rationale for cutblock TS2 is considered to be consistent with the requirements of the Alberni Valley Community Forest Stewardship Plan 2011-2016, Section 5.2.3 and the Factors listed under FPPR Schedule 1 Section 2. A Riparian Assessment was completed by Meridian Forest Services Ltd. in September 2015. These Riparian Management Strategies are consistent with FPPR S 47 to S 58.

Definitions:
FX: Fall across acceptable.
FA: Fall Away only. Timber is to be felled away from the stream
YA: Yard Away. Timber is to be yarded away.
YX: Yard Across acceptable. Follow Y & L SOP
NC: No stream cleaning required.
NX: No crossings

CUTBLOCK AND ROAD SITE PLAN

RPF SIGNATURE AND SEAL		
Signing RPF:	Donna Underwood RPF #3136 RPF Name (Printed)	RPF Signature and Seal
Date Signed (dd/mm/yyyy)	07/06/2016	07/06/16

"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."

Due Diligence

Two falling corners and/or road stations must be referenced in the field with the release map on a continual basis before, and during the felling of any timber within this setting. If you are unsure of your location, Stop Work and call a supervisor.

Forest and Range Practices Act

How to follow plan:

1) Always read and understand your plans and maps.
2) Always match your plan and map to what you find on the ground and then check that you can do the work.
3) Stop and ask if you cannot follow the plan and map.
4) Know your responsibilities. Ask if you are unsure.

Due Dilligence means following these steps.

Timbermarking requirements:
All decked timber must be sufficiently marked (at least 10%) when the setting is inactive.

Safety Coordinates
Latitude: 49°16'33"N
Longitude: 125°19'57"W

Field Marking Standards:

Activity	Ribbon	Paint
Falling Boundary	FALLING BOUNDARY	●
Internal Boundaries	FALLING BOUNDARY	●
Reconnaissance Lines		
Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	●
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	●
Management Zones (All)		
Reserve Trees (Painted)	L	●

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

ALBERNI VALLEY COMMUNITY FOREST

SITE PLAN MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: C
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 05 -May -2016

Scale: 1:5,000
N
Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

MAP LEGEND

Boundary Features:
Falling Boundary
Heli Splitline
Adjacent Block-Planned
Harvested
Legal Boundary
Pruning
Feathering
Road Features:
Built Road
Deactivated Road
Proposed Road
Backspar Trail
Recreation Trail
Bridge
Road Station
Existing Culvert
New Culvert
Culvert to be replaced
Natural Features:
Windthrow
Snag
Swamp
Slide
Rock Bluff
Rock
Resource Features:
PSP
Single Tree Retention
Monumental Cedar
Archaeological Feature/CMT
Quarry/Gravel Pit
Bear Den/Bird Nest
Helipad/Service Landing
Index Contour
Intermediate Contour
Riparian Features:
Fish Streams (S1-S4)
Non Fish streams (S5, S6)
Unclassified Creek
Non Classified Drainage
Gully
FSZ Stream
Reach Break/Fish Barrier
Stream ID
Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5
Sensitive and Designated Areas:
Wildlife Tree Retention Area
Scenic Area
Legal OGMA

Silviculture Instructions
SU 1
SU 2
PAS/Roads
Sensitive Soils

HAZARD ALERT

1) There is windthrow dispersed throughout the cutblock with associated hazards such as, trees under tension, loose root wads and overhead hazards

Areas of Heavy Windthrow

2) A rock fall hazard has been identified and workers must be made aware of this.

3) Hauling Hazard - Steep road grades.
Review the Steep Grade Assessment on the back of the release map for hauling limitations.

SU	Stocking Standards	BEC Zone	Subzone	Variant	Site Series		Area (ha)
					Dominant (SS)	Related (SS-%)	
1	1028537	CWH	mm	1	01	03(25%)05(25%)	7.2
2	1028545	CWH	mm	2	01	03(25%)	2.7
Net Area to be Reforested							**9.9**
Timbered Leave Areas							1.2
Wildlife Tree Retention Area							1.1
Permanent Access Structures (Roads)							1.1
						Total Area Under Prescription:	**13.3**

Prepared By:
MERIDIAN Forest Services Ltd.
PO Box 275
#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

Due Diligence

Two falling corners and/or road stations must be referenced in the field with the release map on a continual basis before, and during the felling of any timber within this setting. If you are unsure of your location, Stop Work and call a supervisor.

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Longitude: 125°19'57"W

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Internal Boundaries	FALLING BOUNDARY	●
Reconnaissance Lines		
Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	●
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	●
Management Zones (All)		
Reserve Trees (Painted)	L	●

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

Falling & Yarding Release
Hauling can be conducted once Steep Grades have been assessed & deemed safe for hauling.

K2D 0R1

K2D 009

K2D

K2D

Hammermark for outside R/W only

HAZARD ALERT

1) There is windthrow dispersed throughout the cutblock with associated hazards such as, trees under tension, loose root wads and overhead hazards

Areas of Heavy Windthrow

2) A rock fall hazard has been identified and workers must be made aware of this.

3) Hauling Hazard - Steep road grades.
Review the Steep Grade Assessment on the back of the release map for hauling limitations.

ALBERNI VALLEY COMMUNITY FOREST

DEFLECTION LINE MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: C
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 06 -May -2016

Scale: 1:5,000
N
Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

MAP LEGEND

Boundary Features:
Falling Boundary
Heli Splitline
Adjacent Block-Planned
Harvested
Legal Boundary
Pruning
Feathering
Road Features:
Built Road
Deactivated Road
Proposed Road
Backspar Trail
Recreation Trail
Bridge
Road Station
Existing Culvert
New Culvert
Culvert to be replaced
Natural Features:
Windthrow
Snag
Swamp
Slide
Rock Bluff
Rock
Resource Features:
PSP
Single Tree Retention
Monumental Cedar
Archaeological Feature/CMT
Quarry/Gravel Pit
Bear Den/Bird Nest
Helipad/Service Landing
Index Contour
Intermediate Contour
Riparian Features:
Fish Streams (S1-S4)
Non Fish streams (S5, S6)
Unclassified Creek
Non Classified Drainage
Gully
FSZ Stream
Reach Break/Fish Barrier
Stream ID
Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5
Sensitive and Designated Areas:
Wildlife Tree Retention Area
Timber Leave Area
Legal OGMA

Harvest Methods:
Grapple
Hoe Forward
Hoechuck
Helicopter
Steep Hoechuck
Right-of-Way
Widening
Yarding Features:
Backspar Tree
Sensitive Soils
Heli Drop Zone
Steep Grade
Yarding Direction
Ridge/Yarding Break

Falling Type	Ha	Volume
Handfalling	10.0	12620
Mechanical	0.0	0
TOTAL	10.0	12620
CRUISE VOL/HA (m3)		1262
ENG VOL/HA (m3)		1262
HAUL DISTANCE		
Distance to Post Office Port Alberni		52.8 km
Travel Time from Port Alberni		80 min
Sproat Sort		50.0 km

HARVEST METHODS		
System	Ha	Volume
R/W	1.7	2145
O/RW	0.1	126
Hoe Chuck	0.0	0
Grapple	6.4	8077
Helicopter	1.8	2272
Skidder	0.0	0
Harvest Area	10.0	12620
Harvested Block	1.1	
R/W Removed	0.0	
WTRA	1.1	
TLA	1.2	
Gross Area	13.4	12620

VOLUME BY TIMBERMARK			
Timbermark	Type	Ha	Vol
K2D/009	CROWN	8.2	10349
K2D/0R1	CROWN	1.8	2271
TOTAL		10.0	12620
Field Work:	MFS		
Checked By:	AVCF		
AVCF CORP:		Date:	
CONTRACTOR:		Date:	

Species	
Fd	38%
Hw	42%
Ba	13%
Cw	2%
Yc	5%
Pw	0%
Dr	0%
Total	100%
OG	100%
SG	0%

PROFESSIONAL SEAL AND SIGNATURE

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.

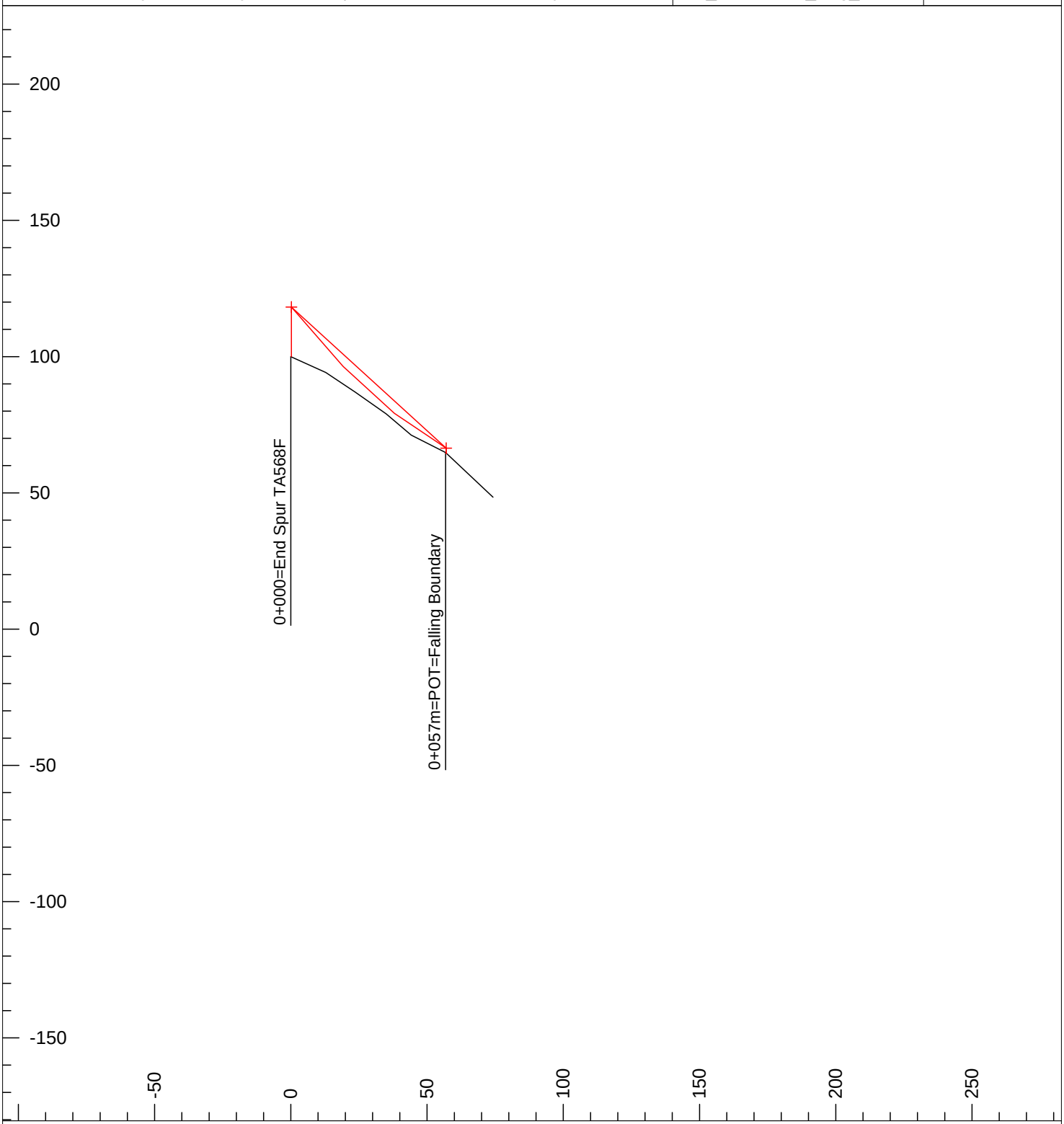
AVCF CORP: DATE:

Prepared By:
MERIDIAN Forest Services Ltd.
PO Box 275
#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

TERRAIN Profile: G1-0 | Scale 1:2000

Z:\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2 Taylor Mt. Adder\GIS_Data\Road_Eng_Files\DLi 15/12/08 Deflection Lin



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

TERRAIN Profile: DL 1-1-0 | Scale 1:2000

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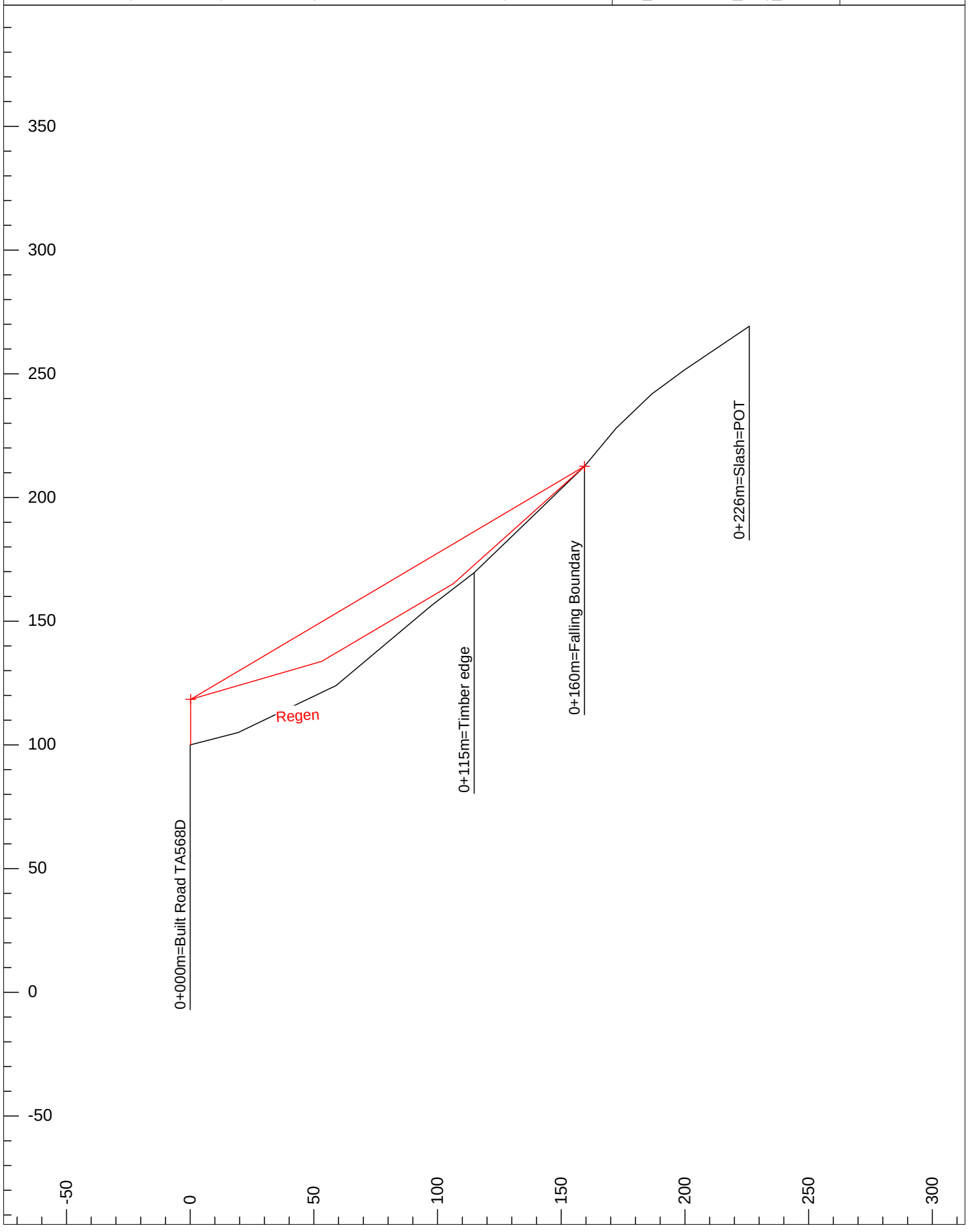

TERRAIN Profile: G1-2-0 | Scale 1:2000

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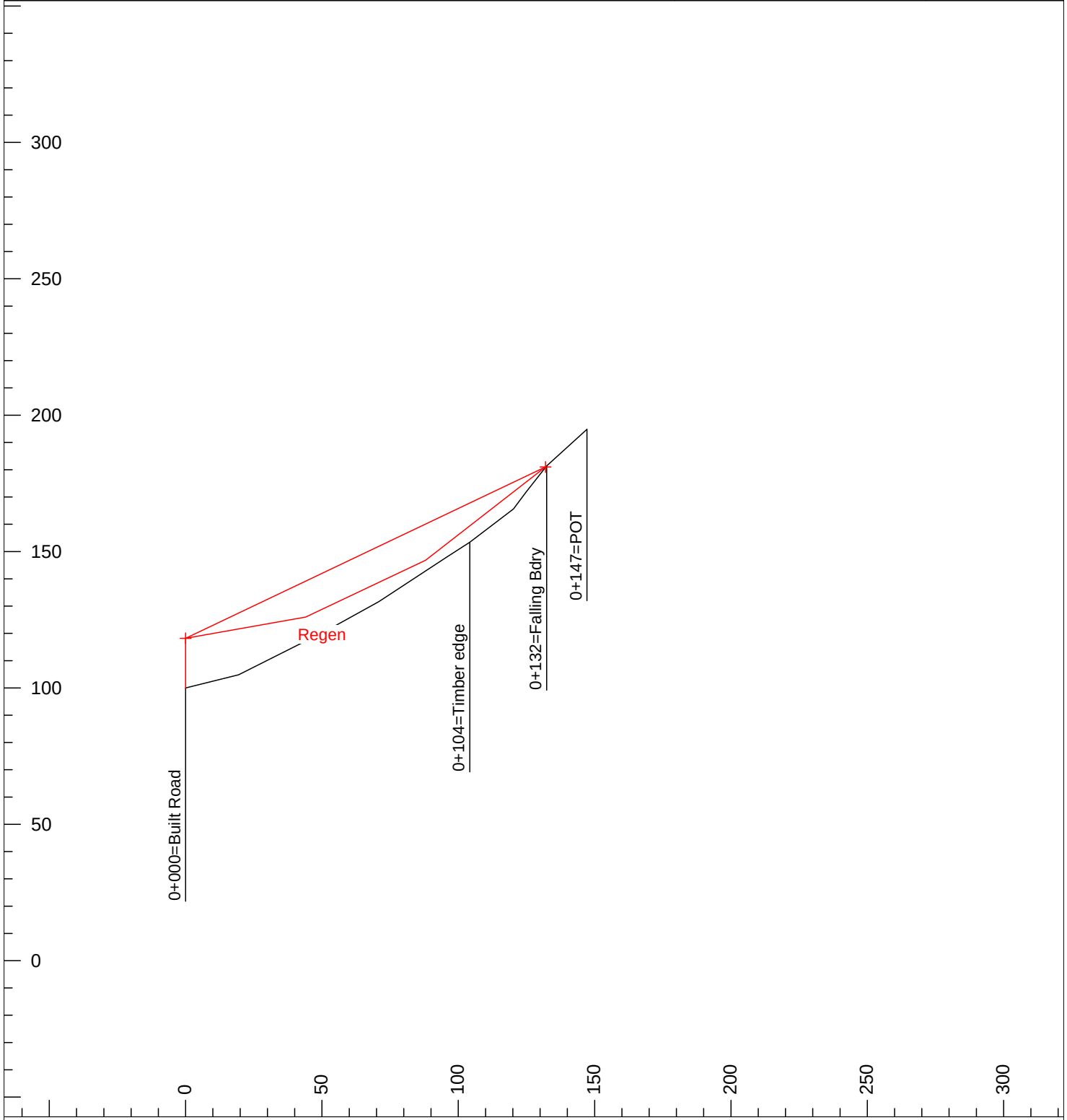

Simple third point deflection: 10.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

TERRAIN Profile: G2-0 | Scale 1:2000

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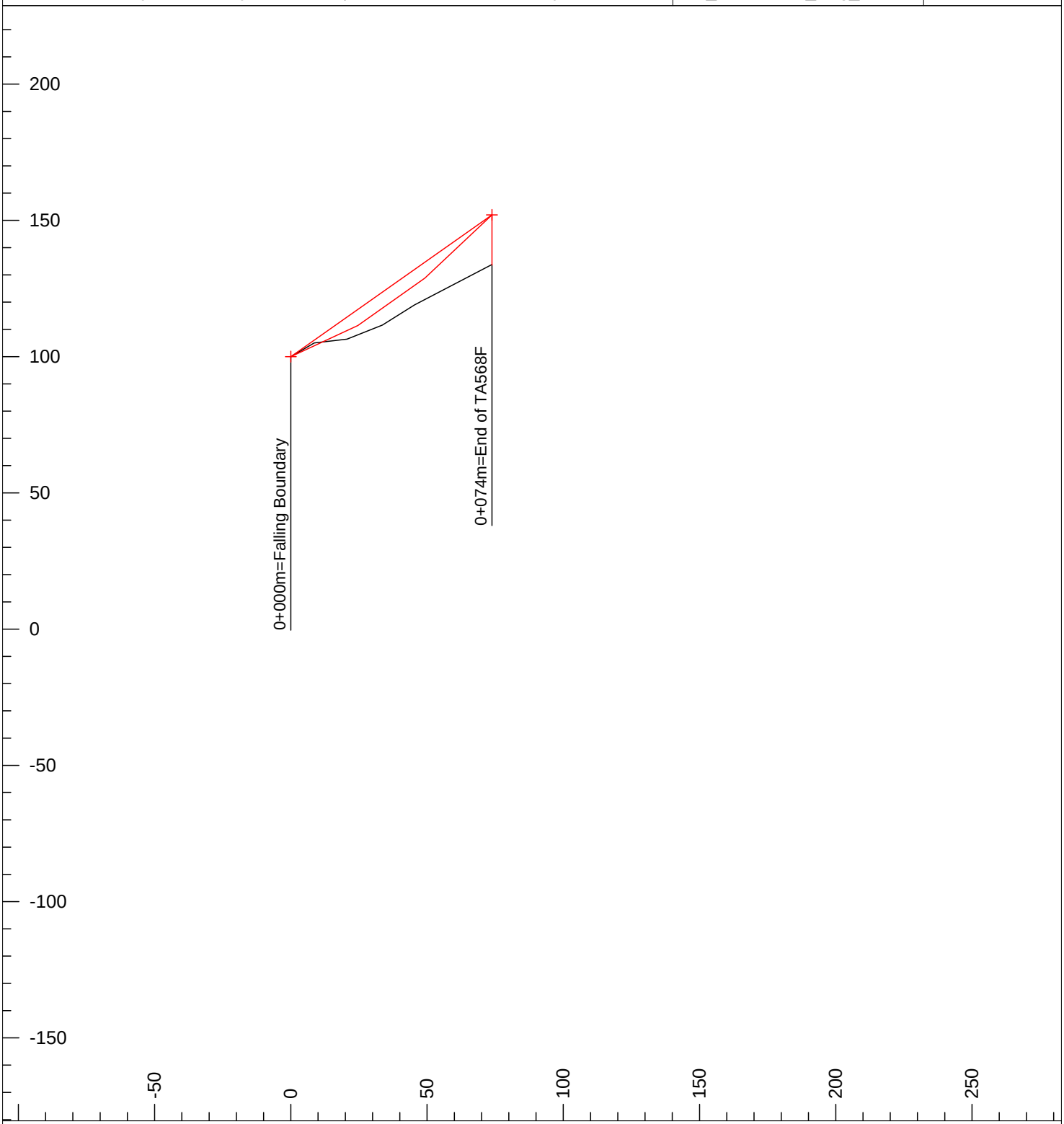
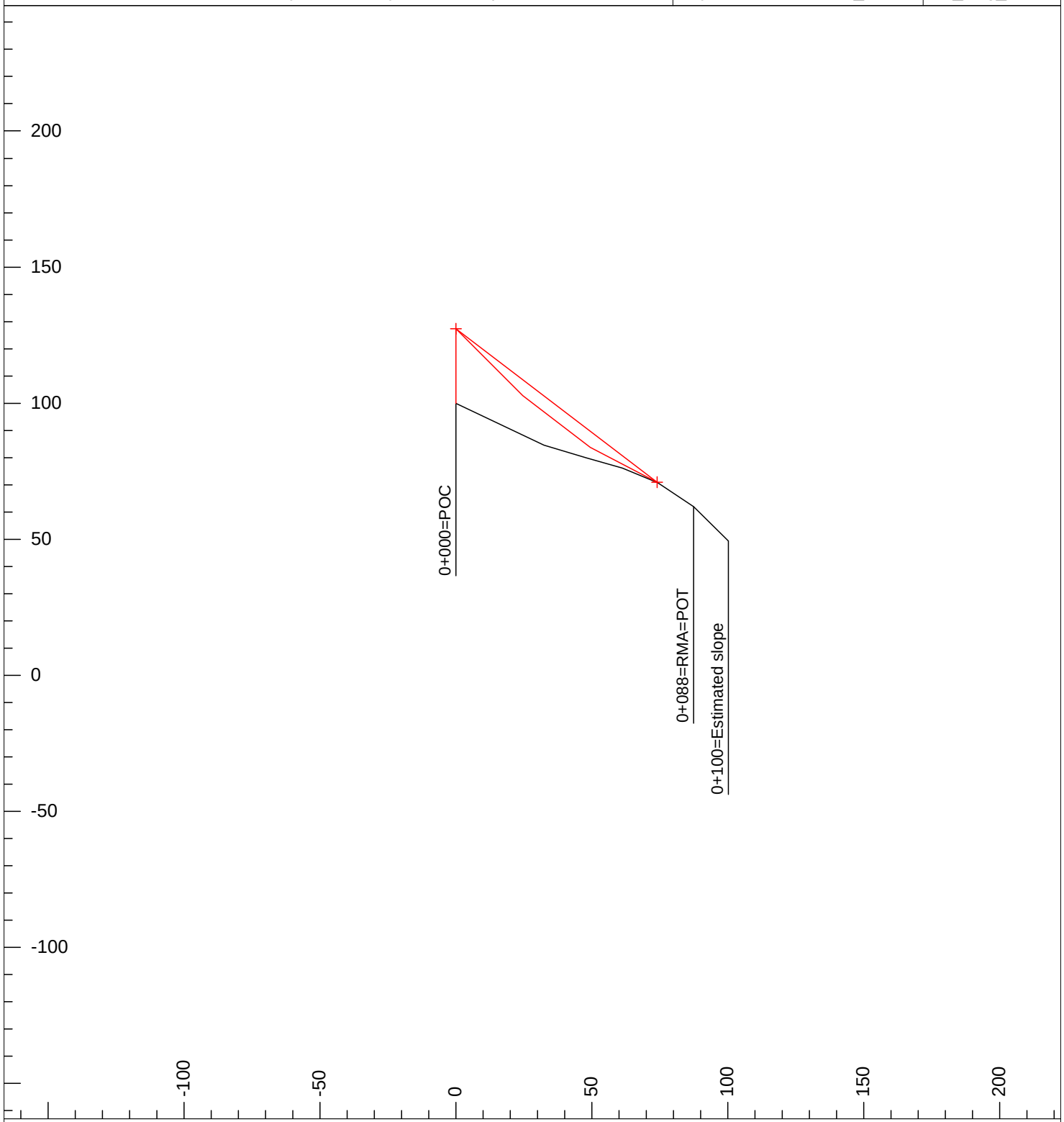


Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

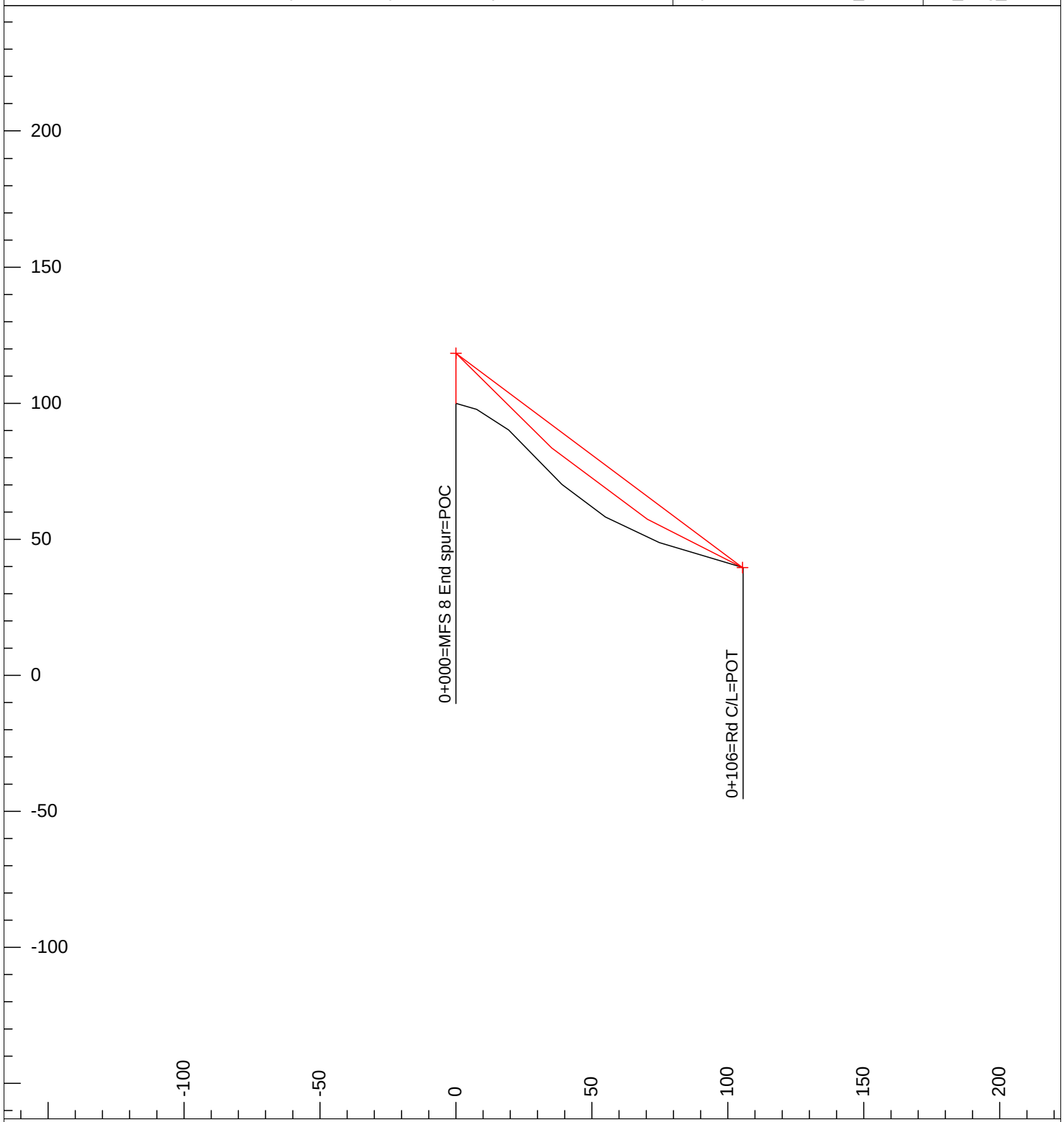
TERRAIN Profile: G4@350-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 8.0%

Highlead, ML, HB, Butt. Rigg., Car Wt.=300lbs

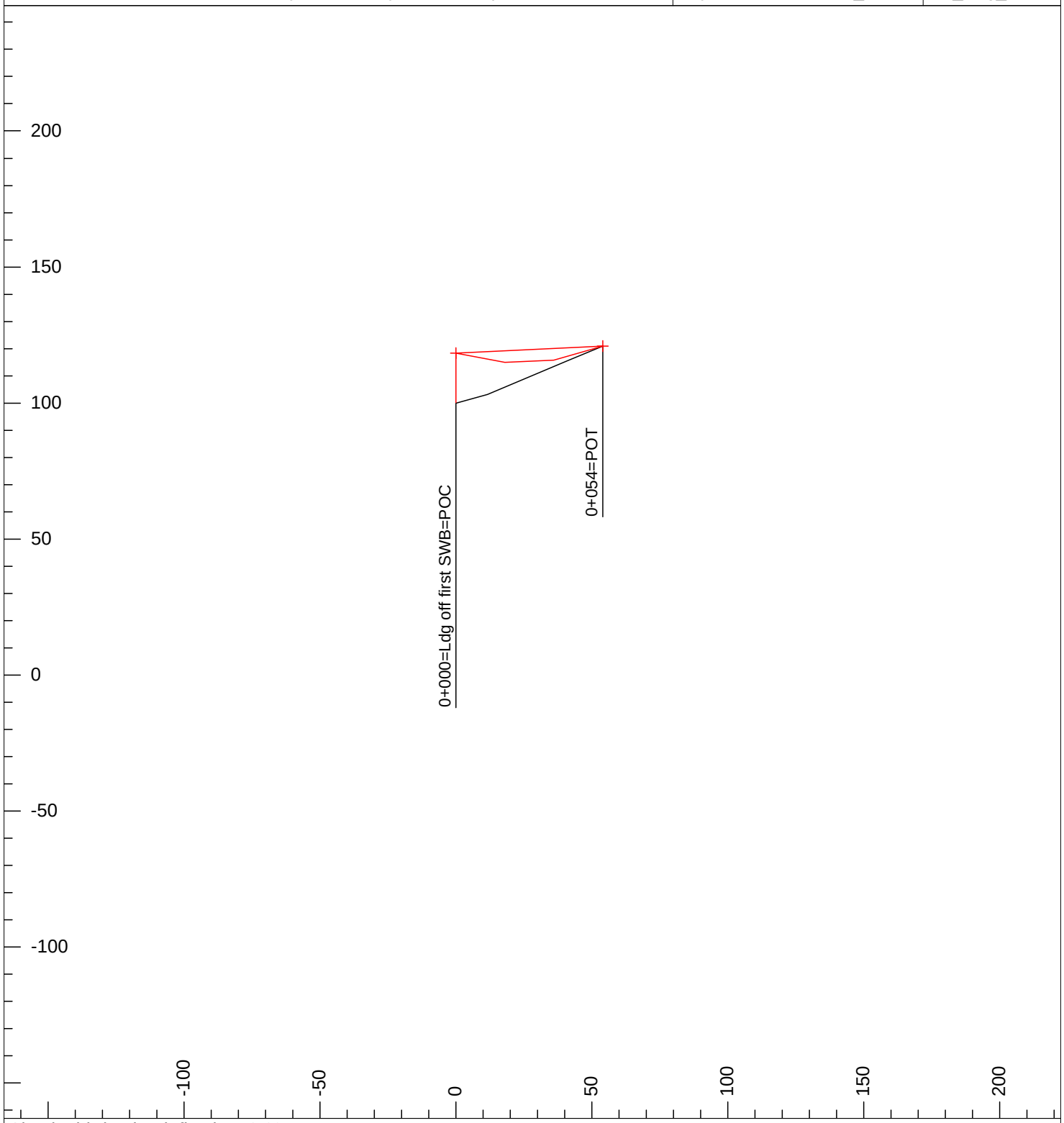
TERRAIN Profile: G5@310-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

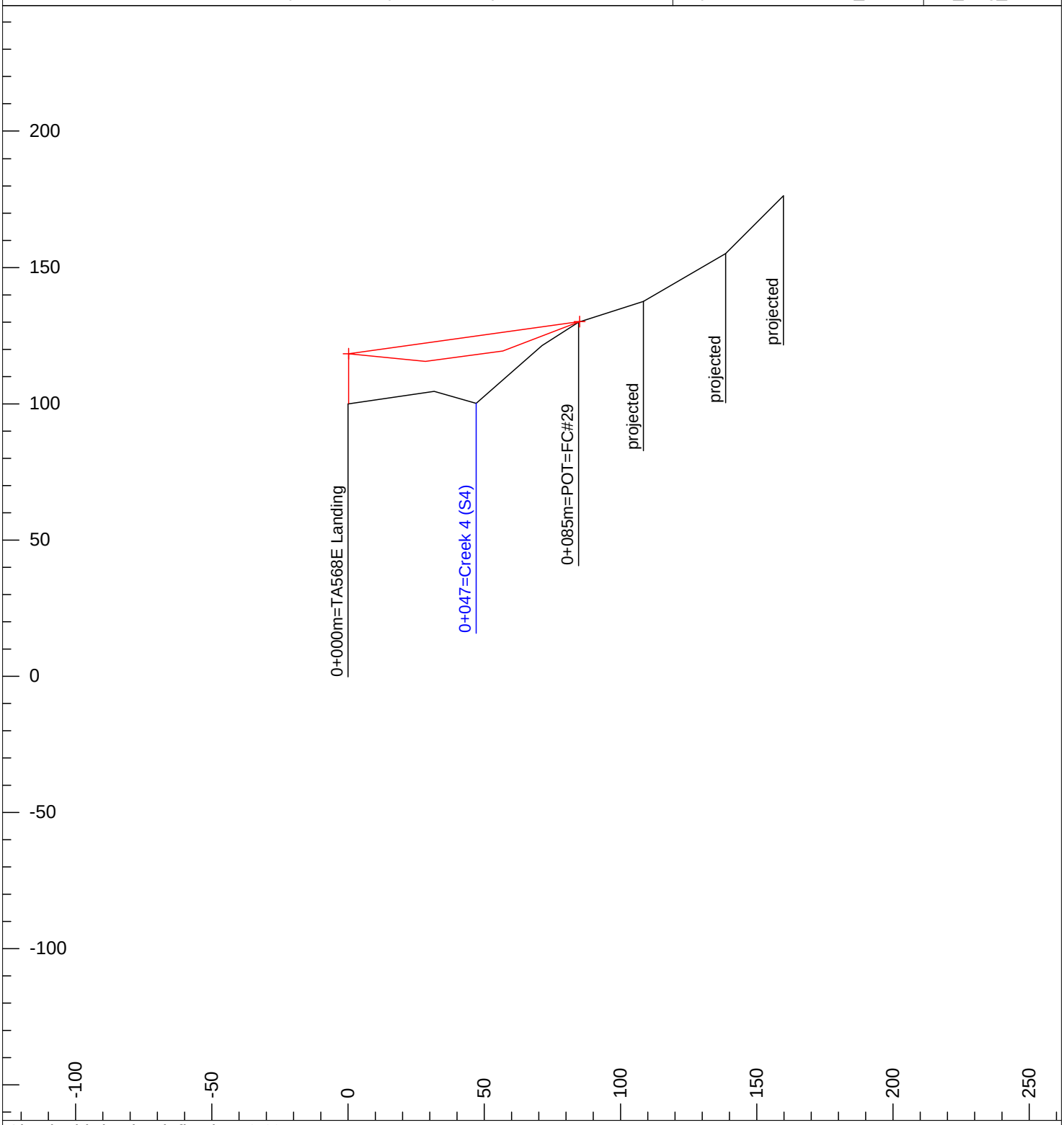
TERRAIN Profile: G9@104-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

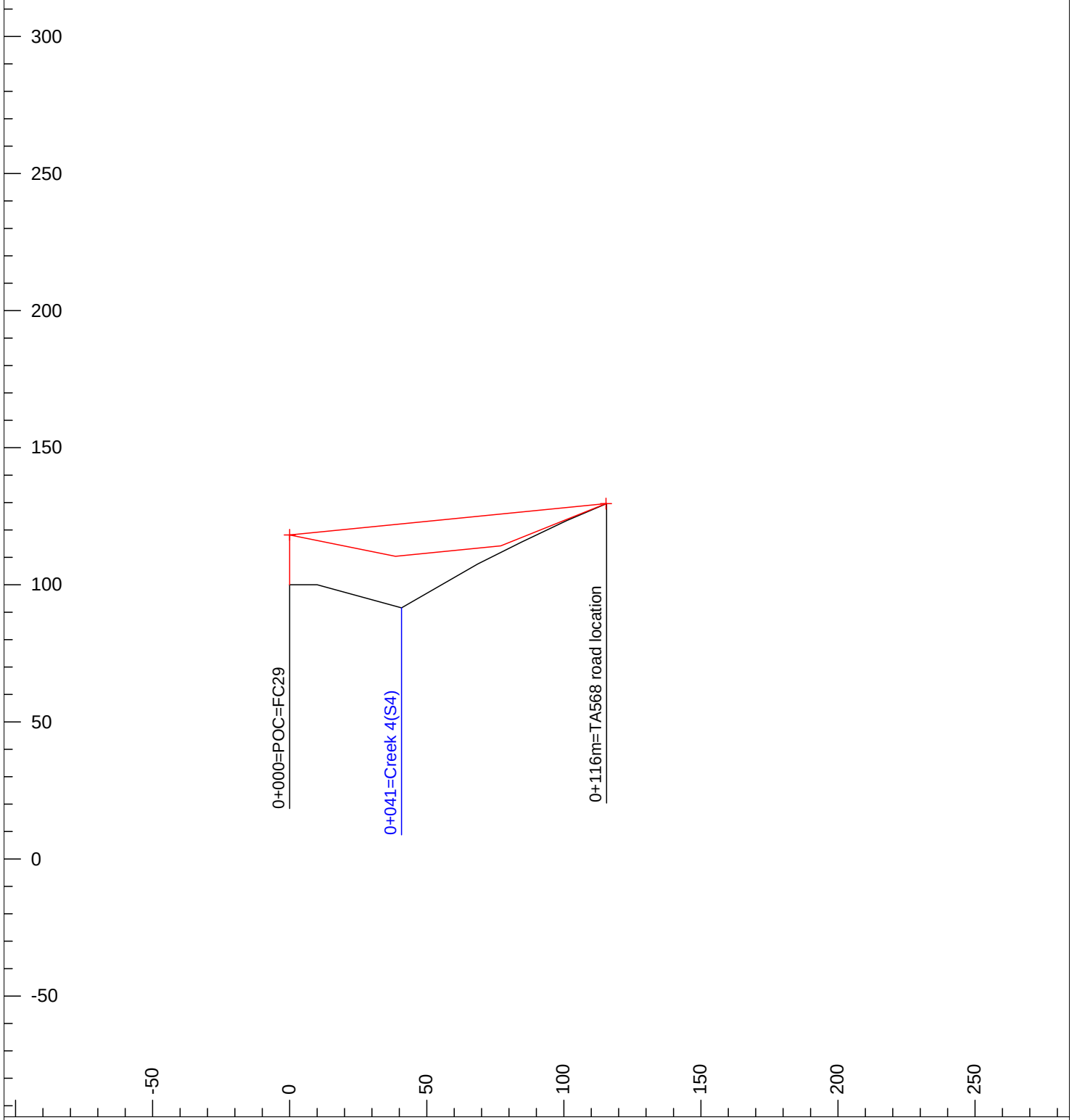
TERRAIN Profile: G11@130-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

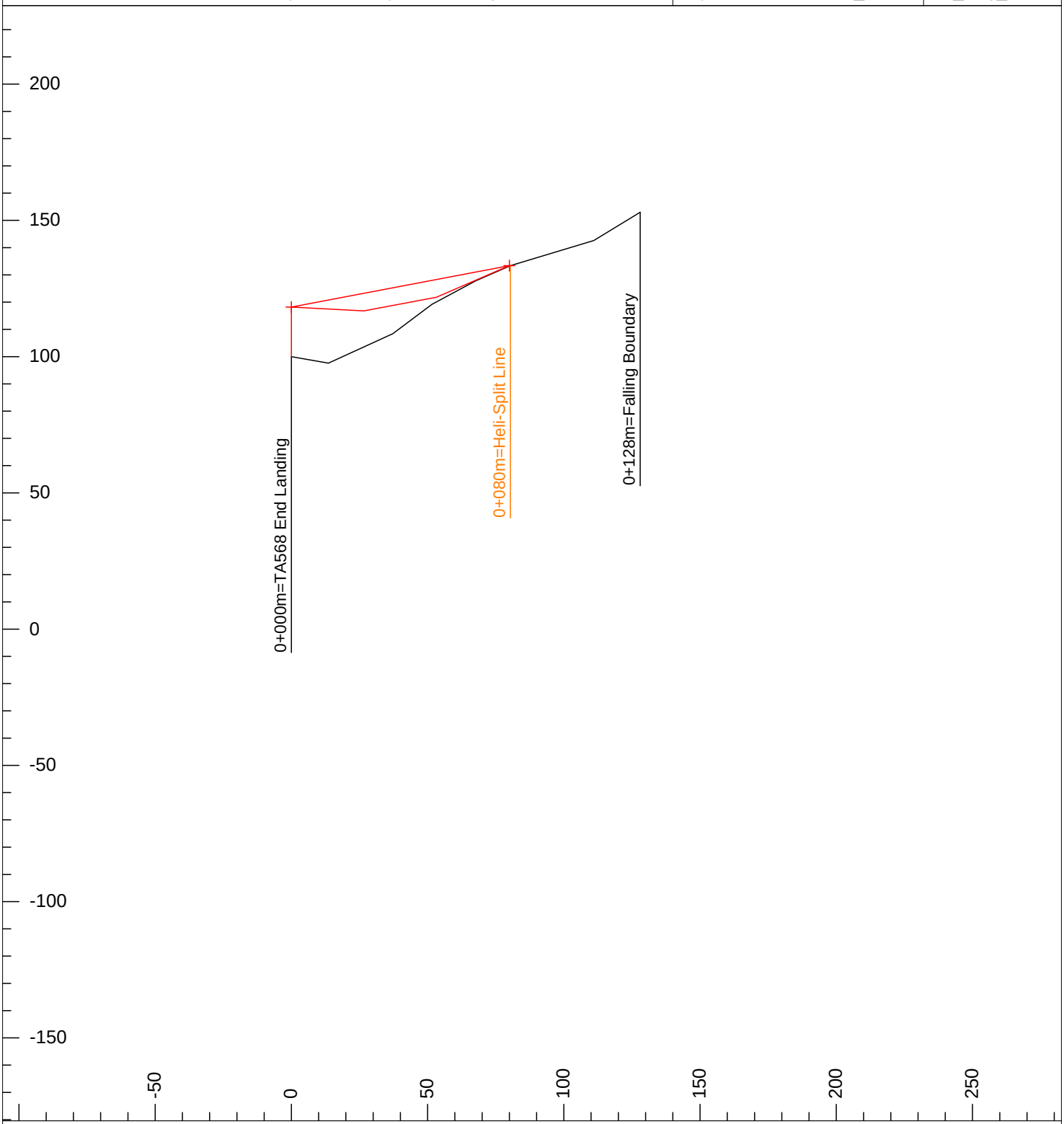
TERRAIN Profile: G12@198-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 10.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

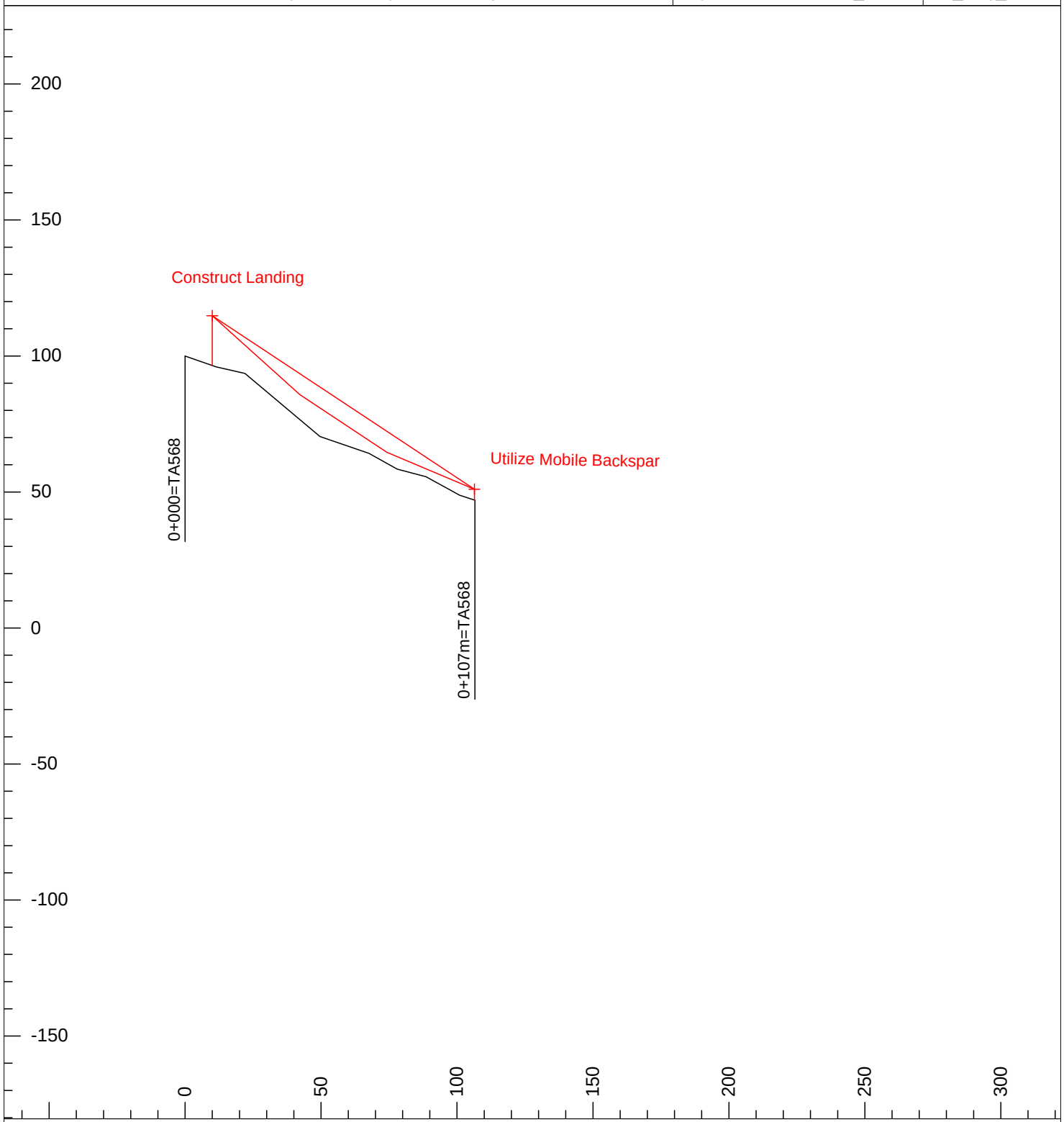
TERRAIN Profile: G13@100-1	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/08 Files\DLines\T



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

TERRAIN Profile: G14@327-0	Scale 1:2000
\\MSERVER\Clients\Alberni Valley Community Forest Corp\Cutblocks\2015\TS2	Taylor Mt. Adder\GIS_Data\Ro; 15/12/09 Files\DLines\T



Simple third point deflection: 8.0%

Grapple, ML, HB, Grapple, Car Wt.=4000lbs

Due Diligence

Two falling corners and/or road stations must be referenced in the field with the release map on a continual basis before, and during the felling of any timber within this setting. If you are unsure of your location, Stop Work and call a supervisor.

Forest and Range Practices Act

How to follow plan:

1) Always read and understand your plans and maps.
2) Always match your plan and map to what you find on the ground and then check that you can do the work.
3) Stop and ask if you cannot follow the plan and map.
4) Know your responsibilities. Ask if you are unsure.

Due Dilligence means following these steps.

Timbermarking requirements:
All decked timber must be sufficiently marked (at least 10%) when the setting is inactive.

Safety Coordinates
Latitude: 49°16'33"N
Longitude: 125°19'57"W

Field Marking Standards:

Activity	Ribbon	Paint
Falling Boundary	FALLING BOUNDARY	●
Internal Boundaries	FALLING BOUNDARY	●
Reconnaissance Lines		
Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	●
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	●
Management Zones (All)		
Reserve Trees (Painted)	L	●

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

Falling & Yarding Release
Hauling can be conducted once Steep Grades have been assessed & deemed safe for hauling.

K2D 0R1

K2D 009

K2D

K2D

Hammermark for outside R/W only

HAZARD ALERT

1) There is windthrow dispersed throughout the cutblock with associated hazards such as, trees under tension, loose root wads and overhead hazards

Areas of Heavy Windthrow

2) A rock fall hazard has been identified and workers must be made aware of this.

3) Hauling Hazard - Steep road grades.
Review the Steep Grade Assessment on the back of the release map for hauling limitations.

ALBERNI VALLEY COMMUNITY FOREST

DEFLECTION LINE MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: C
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 06 -May -2016

Scale: 1:5,000
N
Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

MAP LEGEND

Boundary Features:
Falling Boundary
Heli Splitline
Adjacent Block-Planned
Harvested
Legal Boundary
Pruning
Feathering
Road Features:
Built Road
Deactivated Road
Proposed Road
Backspar Trail
Recreation Trail
Bridge
Road Station
Existing Culvert
New Culvert
Culvert to be replaced
Natural Features:
Windthrow
Snag
Swamp
Slide
Rock Bluff
Rock
Resource Features:
PSP
Single Tree Retention
Monumental Cedar
Archaeological Feature/CMT
Quarry/Gravel Pit
Bear Den/Bird Nest
Helipad/Service Landing
Index Contour
Intermediate Contour
Riparian Features:
Fish Streams (S1-S4)
Non Fish streams (S5, S6)
Unclassified Creek
Non Classified Drainage
Gully
FSZ Stream
Reach Break/Fish Barrier
Stream ID
Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5
Sensitive and Designated Areas:
Wildlife Tree Retention Area
Timber Leave Area
Legal OGMA

Harvest Methods:
Grapple
Hoe Forward
Hoechuck
Helicopter
Steep Hoechuck
Right-of-Way
Widening
Yarding Features:
Backspar Tree
Sensitive Soils
Heli Drop Zone
Steep Grade
Yarding Direction
Ridge/Yarding Break

Falling Type	Ha	Volume
Handfalling	10.0	12620
Mechanical	0.0	0
TOTAL	10.0	12620
CRUISE VOL/HA (m3)		1262
ENG VOL/HA (m3)		1262
HAUL DISTANCE		
Distance to Post Office Port Alberni		52.8 km
Travel Time from Port Alberni		80 min
Sproat Sort		50.0 km

HARVEST METHODS		
System	Ha	Volume
R/W	1.7	2145
O/RW	0.1	126
Hoe Chuck	0.0	0
Grapple	6.4	8077
Helicopter	1.8	2272
Skidder	0.0	0
Harvest Area	10.0	12620
Harvested Block	1.1	
R/W Removed	0.0	
WTRA	1.1	
TLA	1.2	
Gross Area	13.4	12620

VOLUME BY TIMBERMARK			
Timbermark	Type	Ha	Vol
K2D/009	CROWN	8.2	10349
K2D/0R1	CROWN	1.8	2271
TOTAL		10.0	12620
Field Work:	MFS		
Checked By:	AVCF		
AVCF CORP:		Date:	
CONTRACTOR:		Date:	

Species	
Fd	38%
Hw	42%
Ba	13%
Cw	2%
Yc	5%
Pw	0%
Dr	0%
Total	100%
OG	100%
SG	0%

PROFESSIONAL SEAL AND SIGNATURE

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.

AVCF CORP: DATE:

Prepared By:
MERIDIAN Forest Services Ltd.
PO Box 275
#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

Safety Highlights – OPENING#TS2

ACCESS ROAD: TA568 **CUTTING PERMIT: N0. 9** **TIMBERMARK: K2D 009**

STEEP ROAD GRADES

Road segments with gradients > 18% have been identified on the Harvest and Road Instruction Plan Map in and en route to the setting, they are as follows:

TA568J

- 130-156m
- 164-232m
- 264-276m
- 318-333m
- 433-480m
- 499-523m
- 648-677m
- 703-770m
- 820-856m

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 for TS2 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.

ROCK FALL HAZARD

Rock fall hazards have been identified in two areas of cutblock TS2. Area one is below the bluffs from FC 10 to FC#12 and from FC#5 to FC#6. Area two is along the base of the rock outcrops near FC#29, just east of the NCD. A more detailed description of these areas can be found on in the Terrain Stability Assessment Report. The areas may also be viewed on the harvest and road instructions map.

RAINFALL SHUT DOWN

Cutblock TS2 is within Rainfall Shutdown Area "5"

Shutdown Criteria: Activities must shut down if: The total rainfall reaches 72 mm 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 50 mm in 48 hours. Refer to the Return to work guide in the tender document for more information.

Adequate recovery time should be given before building operations commence after a shutdown.

FALLING of SNAGS and DANGER TREES

There are minimal snags and danger trees within cutblock TS2. The following instructing area to be followed if dealing with snags and 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 falling under 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.

EXCEPTION- Wildlife Tree Patch (WTP) areas and OLD Growth Management Areas (OGMAs) - Snags or danger trees can be felled within a WTP for safety reasons although only the portion of the felled snag or danger tree that falls outside the WTP can be recovered.

Steep Slopes

This setting is to be hand felled and logged utilizing both grapple yarding and helicopter harvest systems. Operators are to assess areas prior to operation.

Recreational Use

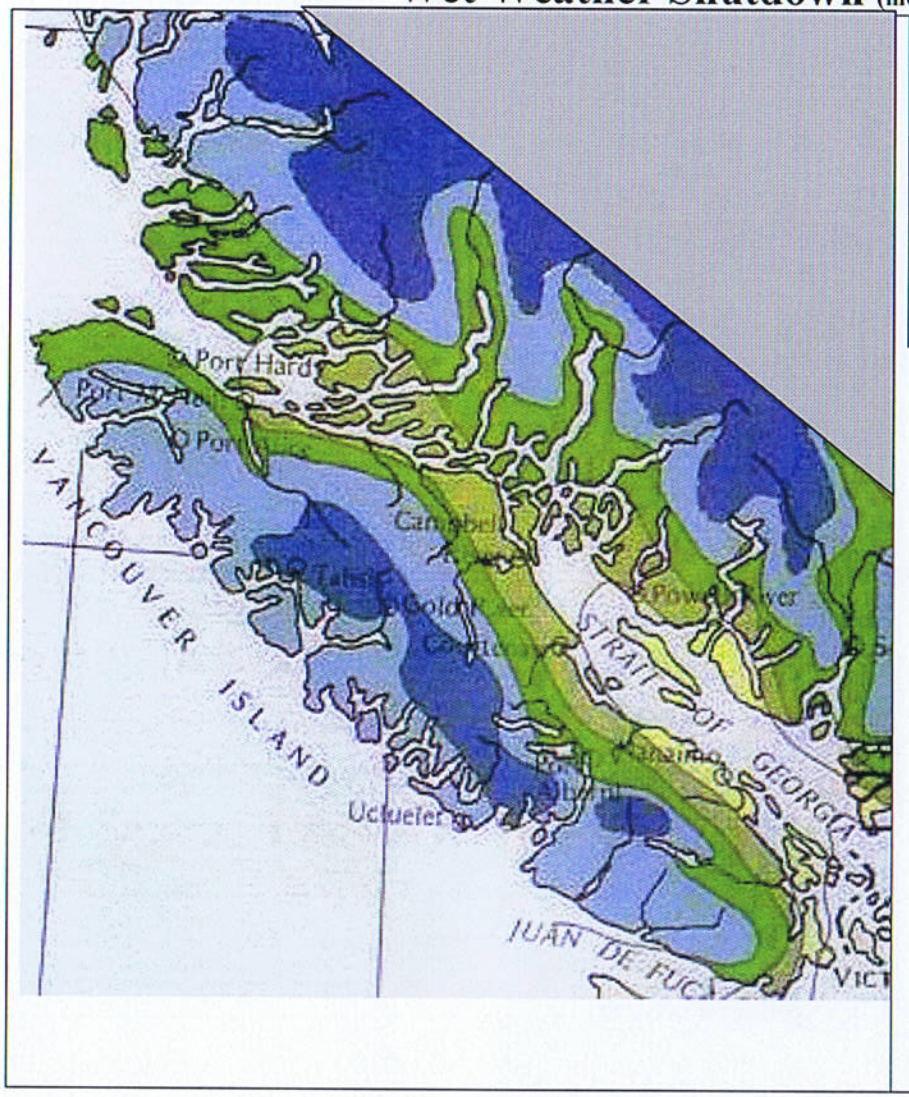
Cutblock TS2 can be accessed from the public. Adequate signs must be posted to inform public of active blasting, logging, and hauling of the area.

Leave Trees

Uniformly dispersed leave trees have been retained within the harvest areas as part of the **legal requirements** for cutblock's located within the Sproat Lake Special Management Zone No. 17. As such, these trees have been selected and marked /identified with a blue panted "L" for leave tree. They are not to be cut or damaged during cutblock development.

BCTS
BC Timber Sales
Strait of Georgia

Wet Weather Shutdown (modified Nov 7, 2006)



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·¤	Shutdown· Threshold¤
°¤	Precipitation·(mm)¤	(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

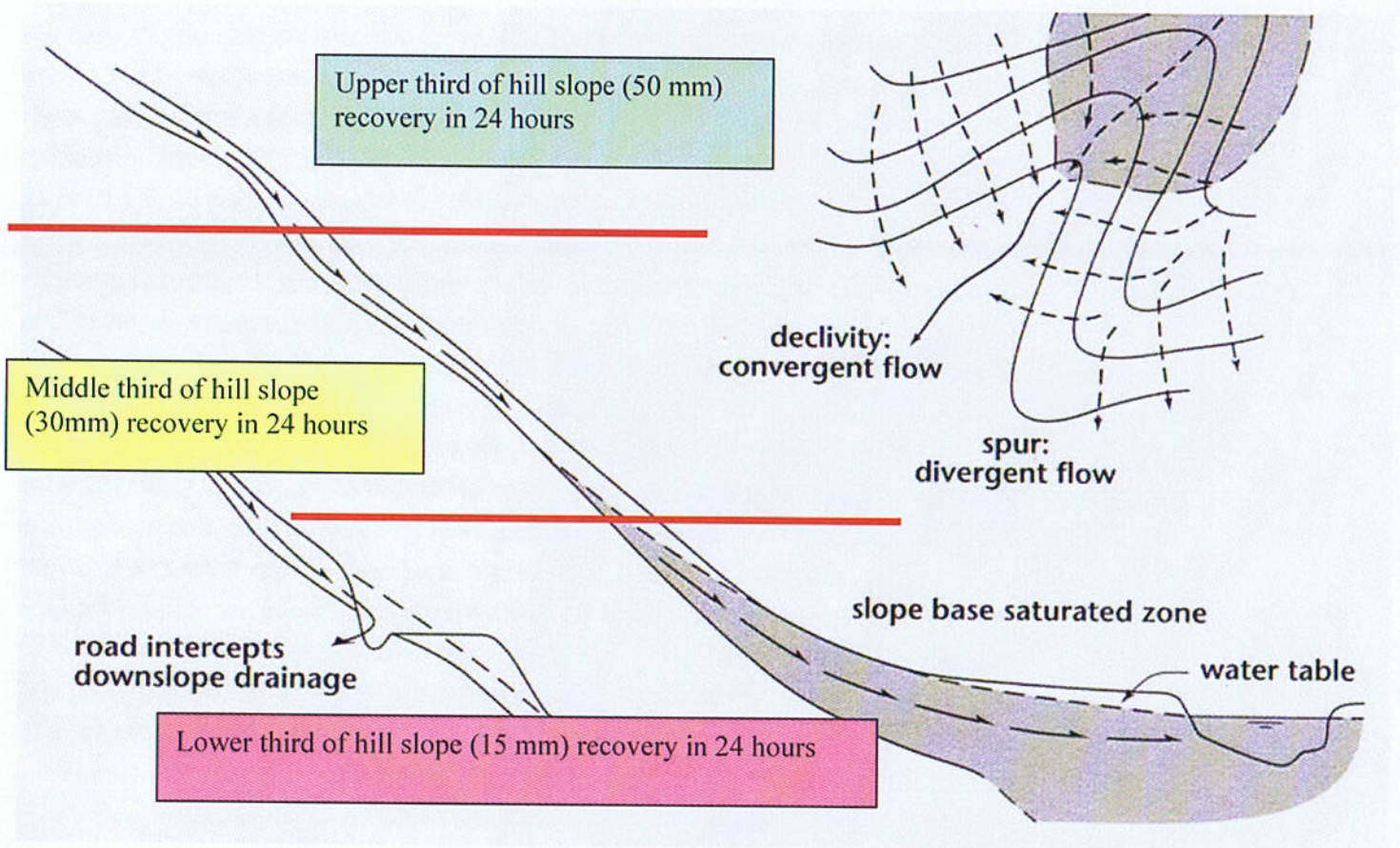
Return to Work Estimation Guide

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



ALBERNI VALLEY COM FOREST

000 - CP# 00

Mount Taylor
Block #: CB TS2

SUMMARY OF VOLUMES (CGNF)
FULL VOLUMES APPLIED

04-Nov-2015 02:42:44PM

Cruised by: CONTOUR FOREST CONSULTANTS INC
Compiled by: Contour Forest Consultants Inc

Map Area Statement Report

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 04-Nov-2015 02:42:44PM
ALBERNI VALLEY COM FOREST | Cruiser Est Decay | PSYU: Quadra | Filename: cbts2_2015opc_20151104.ccp
Licence Number: 000 CP: 00 | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: Contour Forest Consultants Inc
Project: TS2 | CGNF Breakage Table | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Card A Cruise Identity

Licence #	: 000	Cutting Permit #	: 00
Number of Blocks	: 1	Forest Region	: West Coast
Forest District	: South Island	Type	: PSYU
Unit No	: Quadra	Tenure	: Woodlot Licences (COAST)
Quota	: Prop./Mngd.PSYU,TFL,or SSA	Sale Type	: None
Elevation	: 1	Co-ordinates Zone	: Unknown
East	: 0	North	: 0
Total Merch Area	: 9.90	Report Type	: *** FOR MPS PURPOSES ***
Locality	: Mount Taylor		

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	FdHw (BaCy)	0.5
2	FdHw(CyCwBa)	1.7
3	HwFd(BaCyCw)	7.7

Card D Block Description

				Silvicultural Treatment Units
Block	Description	Maturity	Type	A
001	CB TS2	M	1	0.5
			2	1.7
			3	7.7

Card F Harvesting Description

Harvest Method	Harvest Description	Type	Silvicultural Treatment Units A
CC	Cable - Clearcut	2	0.4
HL	Heli - Land	2	1.3
		3	0.5
SC	Ground Systems - Clearcut	1	0.5
		3	7.2

Card G Treatment Unit Description

Treatment Unit	Description
A	A

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

Double Sampling Factors

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00   IFS build 5888

	F	C	H	B	YC
Utilization Limits					
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0

Type Factors

Forest Types:					
1 :FdHw (BaCy)	1.0000	1.0000	1.0000	1.0000	1.0000
2 :FdHw(CyCwBa)	1.0000	1.0000	1.0000	1.0000	1.0000
3 :HwFd(BaCyCw)	1.0000	1.0000	1.0000	1.0000	1.0000

Block Factors

Block 001:

Forest Types:					
1 :FdHw (BaCy)	1.0000	1.0000	1.0000	1.0000	1.0000
2 :FdHw(CyCwBa)	1.0000	1.0000	1.0000	1.0000	1.0000
3 :HwFd(BaCyCw)	1.0000	1.0000	1.0000	1.0000	1.0000

Harvest Method Factors

Method: CC: Cable - Clearcut

Forest Types:					
1 :FdHw (BaCy)	1.0000	1.0000	1.0000	1.0000	1.0000
2 :FdHw(CyCwBa)	1.0000	1.0000	1.0000	1.0000	1.0000
3 :HwFd(BaCyCw)	1.0000	1.0000	1.0000	1.0000	1.0000

Method: HL: Heli - Land

Forest Types:					
1 :FdHw (BaCy)	1.0000	1.0000	1.0000	1.0000	1.0000
2 :FdHw(CyCwBa)	1.0000	1.0000	1.0000	1.0000	1.0000
3 :HwFd(BaCyCw)	1.0000	1.0000	1.0000	1.0000	1.0000

Method: SC: Ground Systems - Clearcut

Forest Types:					
1 :FdHw (BaCy)	1.0000	1.0000	1.0000	1.0000	1.0000
2 :FdHw(CyCwBa)	1.0000	1.0000	1.0000	1.0000	1.0000
3 :HwFd(BaCyCw)	1.0000	1.0000	1.0000	1.0000	1.0000

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

Appraisal Summary Report

04-Nov-2015 02:42:44PM

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2
Location : Mount Taylor

Grades: Cruiser Called Alpha
Cruiser Est Decay
Cruiser Est Waste
CGNF Breakage Table
No Of Blocks : 1

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

Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

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 : 9.9]

All Method Summary

Cruiser Call Variable Length Grades %

Species Code	Description	B	C	D	F	H	I	J	U	X	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
BA	Balsam			10	24	8	50	7		1		1718	1718	0	173.571	173.571	0.000
CE	Cedar				43	13	39		5			463	375	88	46.774	37.919	8.854
CY	Y. Cedar				23	17	41	3		16		706	706	0	71.305	71.305	0.000
FI	Doug-Fir	5	2	2	22	36	25	1			7	4652	4652	0	469.863	469.863	0.000
HE	Hemlock			2	7	38	20	22	6		5	5191	5191	0	524.393	524.393	0.000
	Total											12730	12643	88	1285.905	1277.051	8.854

Harvesting Method Summaries

Harvest Method	Net Volume	Net Vol /10m Log	Net Vol /Hectare	Hem+ Bal%	Partial Cut%	Slope%	Down Tree%	Heavy Fire%
CC	944	1.54	2359.764	20	108	2	0	
HL	3614	1.56	2007.925	28	53	2	0	
SC	8172	1.64	1061.337	70	78	0	0	
Conventional Methods	9116	1.63	1125.457	65	80	0	0	
All Methods	12730	1.61	1285.905	54		1	0	

Cutting Authority

95% Confidence Interval	26.9
Plots/Ha	1.2
Cruised Trees/Plot	5.5
Net 2nd Growth-Conifer %	0.0
Net 2nd Growth-Conifer (m3)	0
Net Immature by Block %	001: 0%
Non Heli Select Conifer (m3/ha)	1285.91
Heli Select Total (decimal)	0.00
Heli+Skyline Total (decimal)	0.28
Piece Size - Conifer (m3/10m log)	1.61
Cruise Date (yy-mm):	15-11

Plots: 12 # <= 5yrs: 12 # > 5yrs: 0 # > 10yrs: 0 # no date: 0

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

All Method Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00   IFS build 5888

[All Treatment Units : 9.9]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	14390	14390		5108	562	5926	1993	802
Net Merchantable	m3	12730	12730		4652	463	5191	1718	706
Net Merch - All	m3/ha	1285.905	1285.905		469.863	46.774	524.393	173.571	71.305
Net Merch - Live	m3/ha	1277.051	1277.051		469.863	37.919	524.393	173.571	71.305
Net Merch - DP	m3/ha	8.854	8.854			8.854			
Decay	%	5	5		2	6	6	8	5
Waste(billing)	%	1	1		1	6	1	0	
Total Cull (DWB)	%	12	12		9	18	12	14	12
Net Merch Vol/Tree	m3	3.43	3.43		11.90	2.38	3.41	1.37	2.03
Avg 13.0 m Log Net	m3	1.61	1.61		3.19	1.21	1.53	0.80	1.34
Useless Dead/Living	%	14	14				29		
Net Second Growth	%								
All Burn Volume	%								
Heavy Fire Volume	%								
Blowdown Volume	%	1	1			19			
Insect Volume	%								

Cruiser Call Variable Length Grades %

#2 Peeler	B	2	2	5				
#3 Peeler	C	1	1	2				
#1 Lum/#1 Prem	D	2	2	2		2		
#2 Lum/#1 Lum	F	12	12	22		7	10	
#2 Sawlog	H	34	34	36	43	38	24	23
#3 Sawlog	I	20	20	25	13	20	8	17
#4 Sawlog	J	20	20	1	39	22	50	41
#5 Utility	U	4	4			6	7	3
#6 Utility	X				5			
#7 Chipper	Y	5	5	7		5	1	16

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Harvest Method Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Harvest Method : CC - Cable - Clearcut [All Treatment Units : 0.4]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	1052	1052		636	83	163	50	121
Net Merchantable	m3	944	944		585	63	145	43	108
Net Merch - All	m3/ha	2359.764	2359.764		1463.098	157.430	363.389	106.884	268.963
Net Merch - Live	m3/ha	2308.201	2308.201		1463.098	105.867	363.389	106.884	268.963
Net Merch - DP	m3/ha	51.563	51.563			51.563			
Decay	%	4	4		2	10	5	8	5
Waste(billing)	%	1	1		0	10			
Total Cull (DWB)	%	10	10		8	24	11	14	11
Net Merch Vol/Tree	m3	3.34	3.34		13.65	1.59	1.61	0.52	3.77
Avg 13.0 m Log Net	m3	1.54	1.54		3.65	0.86	0.86	0.28	2.03
Useless Dead/Living	%								
Net Second Growth	%								
All Burn Volume	%								
Heavy Fire Volume	%								
Blowdown Volume	%	2	2			33			
Insect Volume	%								
% Average Slope		108							
Cruiser Call Variable Length Grades %									
#2 Peeler	B	3	3		5				
#2 Lum/#1 Lum	F	15	15		24				
#2 Sawlog	H	27	27		34	33			36
#3 Sawlog	I	26	26		31		27		26
#4 Sawlog	J	19	19			67	53	100	14
#5 Utility	U	1	1				7		
#7 Chipper	Y	9	9		6		13		24

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Harvest Method Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
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Version: 2014.00 IFS build 5888

Harvest Method : HL - Heli - Land [All Treatment Units : 1.8]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	4043	4043		2209	282	869	269	413
Net Merchantable	m3	3614	3614		2030	217	769	232	366
Net Merch - All	m3/ha	2007.925	2007.925		1127.626	120.749	427.445	128.882	203.222
Net Merch - Live	m3/ha	1970.685	1970.685		1127.626	83.510	427.445	128.882	203.222
Net Merch - DP	m3/ha	37.240	37.240			37.240			
Decay	%	4	4		2	9	6	8	5
Waste(billing)	%	1	1		1	9	0	0	
Total Cull (DWB)	%	11	11		8	23	11	14	11
Net Merch Vol/Tree	m3	3.36	3.36		13.37	1.66	2.10	0.73	3.40
Avg 13.0 m Log Net	m3	1.56	1.56		3.57	0.90	1.06	0.40	1.91
Useless Dead/Living	%	4	4				10		
Net Second Growth	%								
All Burn Volume	%								
Heavy Fire Volume	%								
Blowdown Volume	%	2	2			31			
Insect Volume	%								
% Average Slope		53							
Cruiser Call Variable Length Grades %									
#2 Peeler	B	3	3		5				
#3 Peeler	C								
#1 Lum/#1 Prem	D						1		
#2 Lum/#1 Lum	F	14	14		24		3	5	
#2 Sawlog	H	29	29		35	34	16	12	35
#3 Sawlog	I	25	25		30	2	24	4	24
#4 Sawlog	J	19	19			63	41	76	18
#5 Utility	U	2	2				6	3	
#6 Utility	X					1			
#7 Chipper	Y	8	8		6		9		23

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Harvest Method Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Harvest Method : SC - Ground Systems - Clearcut[All Treatment Units : 7.7]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	9295	9295		2264	197	4894	1674	267
Net Merchantable	m3	8172	8172		2037	183	4277	1444	233
Net Merch - All	m3/ha	1061.337	1061.337		264.504	23.732	555.420	187.482	30.199
Net Merch - Live	m3/ha	1061.337	1061.337		264.504	23.732	555.420	187.482	30.199
Net Merch - DP	m3/ha								
Decay	%	6	6		3	1	6	8	6
Waste(billing)	%	1	1		3		1	1	
Total Cull (DWB)	%	12	12		10	7	13	14	13
Net Merch Vol/Tree	m3	3.48	3.48		10.38	7.54	4.01	1.70	1.09
Avg 13.0 m Log Net	m3	1.64	1.64		2.79	2.69	1.70	1.03	0.83
Useless Dead/Living	%	20	20				35		
Net Second Growth	%								
All Burn Volume	%								
Heavy Fire Volume	%								
Blowdown Volume	%								
Insect Volume	%								
% Average Slope		78							

Cruiser Call Variable Length Grades %

#2 Peeler	B	1	1	4				
#3 Peeler	C	1	1	4				
#1 Lum/#1 Prem	D	3	3	4		3		
#2 Lum/#1 Lum	F	11	11	20		8	11	
#2 Sawlog	H	37	37	39	59	42	27	
#3 Sawlog	I	17	17	17	30	20	9	
#4 Sawlog	J	21	21	3		18	44	91
#5 Utility	U	5	5	1		6	8	9
#6 Utility	X				11			
#7 Chipper	Y	4	4	8		3	1	

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
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Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Net Area: [A : 9.9]
Gross Area: [Harvested : 1.1][WTRA : 1.1][Outside R/ : 0.1][Grand Total : 12.2]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	14390	14390		5108	562	5926	1993	802
Net Merchantable	m3	12730	12730		4652	463	5191	1718	706
Net Merch - All	m3/ha	1286	1286		470	47	524	174	71
Distribution	%	100	100		37	4	41	13	6
Decay	%	5	5		2	6	6	8	5
Waste	%	1	1		1	5	1	0	
Waste(billing)	%	1	1		1	6	1	0	
Breakage	%	6	6		5	7	6	6	7
Total Cull (DWB)	%	12	12		9	18	12	14	12
Stems/Ha (Live & DP)		374.7	374.7		39.5	19.6	154.0	126.4	35.2
Avg DBH (Live & DP)	cm	61.0	61.0		109.1	61.6	60.2	39.6	51.8
Snags/Ha		63.2	63.2				63.2		
Avg Snag DBH	cm	17.7	17.7				17.7		
Gross Merch Vol/Tree	m3	3.88	3.88		13.07	2.89	3.89	1.59	2.30
Net Merch Vol/Tree	m3	3.43	3.43		11.90	2.38	3.41	1.37	2.03
Avg Weight Total Ht	m	44.3	44.3		55.5	35.1	40.8	35.5	29.5
Avg Weight Merch Ht	m	38.6	38.6		50.4	28.6	33.9	29.5	23.7
Avg 13.0 m Log Net	m3	1.61	1.61		3.19	1.21	1.53	0.80	1.34
Avg 13.0 m Log Gross	m3	1.71	1.71		3.32	1.35	1.64	0.87	1.42
Avg # of 13.0 m Logs/Tree		2.27	2.27		3.94	2.13	2.37	1.82	1.62
Net Immature	%								
Net 2nd Growth	%								
Average Slope	%	77							
Cruiser Call Variable Length Grades %									
#2 Peeler	B	2	2		5				
#3 Peeler	C	1	1		2				
#1 Lum/#1 Prem	D	2	2		2		2		
#2 Lum/#1 Lum	F	12	12		22		7	10	
#2 Sawlog	H	34	34		36	43	38	24	23
#3 Sawlog	I	20	20		25	13	20	8	17
#4 Sawlog	J	20	20		1	39	22	50	41
#5 Utility	U	4	4				6	7	3
#6 Utility	X					5			
#7 Chipper	Y	5	5		7		5	1	16
Statistical Summary									
Coeff. of Variation	%	41.2	41.2		135.9	161.7	56.0	145.3	255.4
Two Standard Error	%	26.9	26.9		88.7	105.6	36.6	94.9	166.8
Number and Type of Plots		MP = 12							
Number of Potential Trees		65							
Plots/Ha		1.2							
Cruised Trees/Plot		5.5							

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Net Area: Block : (M) - 001:CB TS2, Plots in Block: 12, TUs: [A : 9.9]
Gross Area: [Harvested : 1.1][WTRA : 1.1][Outside R/ : 0.1][Grand Total : 12.2]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	14390	14390		5108	562	5926	1993	802
Net Merchantable	m3	12730	12730		4652	463	5191	1718	706
Net Merch - All	m3/ha	1286	1286		470	47	524	174	71
Distribution	%	100	100		37	4	41	13	6
Decay	%	5	5		2	6	6	8	5
Waste	%	1	1		1	5	1	0	
Waste(billing)	%	1	1		1	6	1	0	
Breakage	%	6	6		5	7	6	6	7
Total Cull (DWB)	%	12	12		9	18	12	14	12
Stems/Ha (Live & DP)		374.7	374.7		39.5	19.6	154.0	126.4	35.2
Avg DBH (Live & DP)	cm	61.0	61.0		109.1	61.6	60.2	39.6	51.8
Snags/Ha		63.2	63.2				63.2		
Avg Snag DBH	cm	17.7	17.7				17.7		
Gross Merch Vol/Tree	m3	3.88	3.88		13.07	2.89	3.89	1.59	2.30
Net Merch Vol/Tree	m3	3.43	3.43		11.90	2.38	3.41	1.37	2.03
Avg Weight Total Ht	m	44.3	44.3		55.5	35.1	40.8	35.5	29.5
Avg Weight Merch Ht	m	38.6	38.6		50.4	28.6	33.9	29.5	23.7
Avg 13.0 m Log Net	m3	1.61	1.61		3.19	1.21	1.53	0.80	1.34
Avg 13.0 m Log Gross	m3	1.71	1.71		3.32	1.35	1.64	0.87	1.42
Avg # of 13.0 m Logs/Tree		2.27	2.27		3.94	2.13	2.37	1.82	1.62
Net Immature	%								
Net 2nd Growth	%								
Average Slope	%	77							
Cruiser Call Variable Length Grades %									
#2 Peeler	B	2	2		5				
#3 Peeler	C	1	1		2				
#1 Lum/#1 Prem	D	2	2		2		2		
#2 Lum/#1 Lum	F	12	12		22		7	10	
#2 Sawlog	H	34	34		36	43	38	24	23
#3 Sawlog	I	20	20		25	13	20	8	17
#4 Sawlog	J	20	20		1	39	22	50	41
#5 Utility	U	4	4				6	7	3
#6 Utility	X					5			
#7 Chipper	Y	5	5		7		5	1	16
Statistical Summary									
Coeff. of Variation	%	41.2	41.2		135.9	161.7	56.0	145.3	255.4
Two Standard Error	%	26.9	26.9		88.7	105.6	36.6	94.9	166.8
Number and Type of Plots		MP = 12							
Number of Potential Trees		65							
Plots/Ha		1.2							
Cruised Trees/Plot		5.5							

Slope % Statistics
Min= 40, Max=113, CV=32.9, Std Error of Mean=7.3, 2SE%=20.9

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Net Area: Type 1 (M):FdHw (BaCy), Plots in Type: 1, TUs: [A : 0.5]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	333	333		214			119	
Net Merchantable	m3	302	302		198			104	
Net Merch - All	m3/ha	603	603		396			208	
Distribution	%	100	100		66			34	
Decay	%	4	4		2			7	
Waste	%								
Waste(billing)	%								
Breakage	%	5	5		5			6	
Total Cull (DWB)	%	9	9		7			13	
Stems/Ha (Live & DP)		193.1	193.1		33.1			160.0	
Avg DBH (Live & DP)	cm	62.9	62.9		124.0			39.9	
Snags/Ha									
Avg Snag DBH	cm								
Gross Merch Vol/Tree	m3	3.45	3.45		12.91			1.49	
Net Merch Vol/Tree	m3	3.12	3.12		11.94			1.30	
Avg Weight Total Ht	m	37.7	37.7		42.6			29.3	
Avg Weight Merch Ht	m	32.9	32.9		38.5			22.2	
Avg 13.0 m Log Net	m3	1.52	1.52		4.20			0.69	
Avg 13.0 m Log Gross	m3	1.59	1.59		4.30			0.74	
Avg # of 13.0 m Logs/Tree		2.17	2.17		3.00			2.00	
Net Immature	%								
Net 2nd Growth	%								
Cruiser Call Variable Length Grades %									
#2 Lum/#1 Lum	F	33	33		50				
#2 Sawlog	H	16	16		25				
#3 Sawlog	I	15	15		22				
#4 Sawlog	J	34	34					100	
#7 Chipper	Y	2	2		3				
Statistical Summary									
Coeff. of Variation	%								
Two Standard Error	%								
Number and Type of Plots		MP = 1							
Number of Potential Trees		3							
Plots/Ha		2.0							
Cruised Trees/Plot		3.0							

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Summary

Average Line Method | Grades: Cruiser Called Alpha | FIZ: B | 04-Nov-2015 02:42:44PM
ALBERNI VALLEY COM FOREST | Cruiser Est Decay | PSYU: Quadra | Filename: cbts2_2015opc_20151104.ccp
Licence Number: 000 CP: 00 | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: Contour Forest Consultants Inc
Project: TS2 | CGNF Breakage Table | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Net Area: Type 2 (M):FdHw(CyCwBa), Plots in Type: 2, TUs: [A : 1.7]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	4473	4473		2702	351	692	211	516
Net Merchantable	m3	4012	4012		2487	268	618	182	457
Net Merch - All	m3/ha	2360	2360		1463	157	363	107	269
Distribution	%	100	100		62	7	15	5	11
Decay	%	4	4		2	10	5	8	5
Waste	%	1	1		0	8			
Waste(billing)	%	1	1		0	10			
Breakage	%	6	6		5	7	6	6	7
Total Cull (DWB)	%	10	10		8	24	11	14	11
Stems/Ha (Live & DP)		707.2	707.2		107.2	99.1	225.1	204.5	71.3
Avg DBH (Live & DP)	cm	61.9	61.9		115.6	56.7	46.1	27.9	66.8
Snags/Ha									
Avg Snag DBH	cm								
Gross Merch Vol/Tree	m3	3.72	3.72		14.83	2.08	1.81	0.61	4.26
Net Merch Vol/Tree	m3	3.34	3.34		13.65	1.59	1.61	0.52	3.77
Avg Weight Total Ht	m	46.0	46.0		57.1	28.6	30.0	25.0	32.7
Avg Weight Merch Ht	m	40.9	40.9		52.2	21.7	22.7	16.0	26.9
Avg 13.0 m Log Net	m3	1.54	1.54		3.65	0.86	0.86	0.28	2.03
Avg 13.0 m Log Gross	m3	1.62	1.62		3.75	1.04	0.90	0.30	2.13
Avg # of 13.0 m Logs/Tree		2.30	2.30		3.95	2.00	2.00	2.00	2.00
Net Immature	%								
Net 2nd Growth	%								
Cruiser Call Variable Length Grades %									
#2 Peeler	B	3	3		5				
#2 Lum/#1 Lum	F	15	15		24				
#2 Sawlog	H	27	27		34	33			36
#3 Sawlog	I	26	26		31		27		26
#4 Sawlog	J	19	19			67	53	100	14
#5 Utility	U	1	1				7		
#7 Chipper	Y	9	9		6		13		24
Statistical Summary									
Coeff. of Variation	%	37.2	37.2		89.3	48.8	49.7	141.4	141.4
Two Standard Error	%	334.5	334.5		802.2	438.3	446.5	1270.6	1270.6
Number and Type of Plots		MP = 2							
Number of Potential Trees		17							
Plots/Ha		1.2							
Cruised Trees/Plot		8.5							

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Net Area: Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [A : 7.7]

		Total	Conifer	Decid	F	C	H	B	YC
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					13.0	13.0	13.0	13.0	13.0
Volume and Size Data									
Gross Merchantable	m3	9585	9585		2192	210	5234	1663	286
Net Merchantable	m3	8417	8417		1967	195	4574	1433	249
Net Merch - All	m3/ha	1093	1093		255	25	594	186	32
Distribution	%	100	100		23	2	54	17	3
Decay	%	6	6		3	1	6	8	6
Waste	%	1	1		3		1	0	
Waste(billing)	%	1	1		3		1	1	
Breakage	%	6	6		5	7	6	6	7
Total Cull (DWB)	%	12	12		10	7	13	14	13
Stems/Ha (Live & DP)		313.1	313.1		25.0	3.4	148.3	107.0	29.5
Avg DBH (Live & DP)	cm	60.5	60.5		101.0	87.0	64.2	43.6	41.6
Snags/Ha		81.3	81.3				81.3		
Avg Snag DBH	cm	17.7	17.7				17.7		
Gross Merch Vol/Tree	m3	3.98	3.98		11.41	8.12	4.58	2.02	1.26
Net Merch Vol/Tree	m3	3.49	3.49		10.24	7.54	4.01	1.74	1.09
Avg Weight Total Ht	m	43.8	43.8		54.9	46.3	42.2	37.4	23.9
Avg Weight Merch Ht	m	37.7	37.7		49.5	39.0	35.4	31.7	17.7
Avg 13.0 m Log Net	m3	1.64	1.64		2.70	2.69	1.70	1.07	0.83
Avg 13.0 m Log Gross	m3	1.76	1.76		2.84	2.71	1.83	1.17	0.89
Avg # of 13.0 m Logs/Tree		2.26	2.26		4.02	3.00	2.50	1.73	1.42
Net Immature	%								
Net 2nd Growth	%								
Cruiser Call Variable Length Grades %									
#2 Peeler	B	1	1		5				
#3 Peeler	C	1	1		4				
#1 Lum/#1 Prem	D	3	3		5		3		
#2 Lum/#1 Lum	F	10	10		17		8	12	
#2 Sawlog	H	39	39		40	59	42	29	
#3 Sawlog	I	17	17		17	30	20	9	
#4 Sawlog	J	20	20		3		18	41	91
#5 Utility	U	5	5		1		6	8	9
#6 Utility	X					11			
#7 Chipper	Y	4	4		8		3	1	
Statistical Summary									
Coeff. of Variation	%	38.7	38.7		141.8	300.0	53.2	146.1	300.0
Two Standard Error	%	29.8	29.8		109.0	230.6	40.9	112.3	230.6
Number and Type of Plots		MP = 9							
Number of Potential Trees		45							
Plots/Ha		1.2							
Cruised Trees/Plot		5.1							

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Volume Statistical Analysis

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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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 :FdHw (BaCy)	0	1	1	0.5	603.3	0.02	0	3	3	0.0000		0.0	0.0
2 :FdHw(CyCwBa)	0	2	2	1.7	2359.8	0.32	0	17	17	878.5699	37.2	26.3	334.5
3 :HwFd(BaCyCw)	0	9	9	7.7	1093.1	0.66	0	45	45	423.4374	38.7	12.9	29.8
TOTAL	0	12	12	9.9	1285.9		0	65	65		41.2	11.9	26.9

Number of live & dead potential trees sampled is 65
Number of dead useless trees sampled is 0
Number of live useless trees sampled is 1

The weighted sampling error is 26.9% at the 95% confidence level

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

Basal Area Statistical Analysis

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

FIZ: B
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Version: 2014.00   IFS build 5888

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 :FdHw (BaCy)	0	1	1	0.5	60.0	0.03	0	3	3	0.0000		0.0	0.0
2 :FdHw(CyCwBa)	0	2	2	1.7	212.5	0.33	0	17	17	53.0330	25.0	17.6	224.2
3 :HwFd(BaCyCw)	0	9	9	7.7	90.0	0.64	0	45	45	34.8569	38.7	12.9	29.8
TOTAL	0	12	12	9.9	109.5		0	65	65		35.1	10.1	22.9

Number of live & dead potential trees sampled is 65
Number of dead useless trees sampled is 0
Number of live useless trees sampled is 1

The weighted sampling error is 22.9% at the 95% confidence level

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

Cutting Permit Stand Table (stems/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

[A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									63.2
25				33.0		33.0			
30				35.1		35.1			
35									
40			42.5	31.9	13.3	87.7			
45		12.2	23.1	10.7	9.7	55.6			
50			8.6	7.7		16.3			
55			30.7			30.7			
60			5.4		7.2	12.6			
65			8.9			8.9			
70	4.0		4.3	3.8		12.2			
75			7.3		5.0	12.3	4.9		
80			5.9			5.9			
85		2.6				2.6			
90	2.6		2.3			4.9			
95	3.1		4.4	2.2		9.6			
100	7.6		4.0	2.1		13.8			
105	6.1		3.5			9.6			
110	3.9		1.6			5.5			
115	3.1		1.4			4.6			
120	1.9					1.9			
125	2.9					2.9			
130									
135									
140	1.0					1.0			
145									
150	2.4					2.4			
175	0.9					0.9			
200									
225									
250									
275									
Total	39.5	14.8	154.0	126.4	35.2	369.8			
Dead P		4.9					4.9		
Dead U									
Live U			63.2						63.2
Average DBH(cm) at 5 Levels									
12.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		17.7
17.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		17.7
22.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		
27.5 +	109.1	56.5	60.2	43.8	51.8	63.2	75.0		
32.5 +	109.1	56.5	60.2	51.0	51.8	66.1	75.0		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Stock Table (m3/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Version: 2014.00 IFS build 5888

[A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25				8.2		8.2			
30				18.4		18.4			
35									
40			43.5	41.1	11.1	95.7			
45		18.2	35.2	17.8	14.0	85.1			
50			11.6	17.6		29.2			
55			73.4			73.4			
60			17.7		23.2	40.9			
65			38.6			38.6			
70	17.1		17.2	22.6		57.0			
75			35.2		23.0	58.2	8.9		
80			40.6			40.6			
85		19.7				19.7			
90	18.2		20.8			39.0			
95	22.4		53.0	25.8		101.2			
100	73.4		38.7	22.1		134.3			
105	53.5		55.1			108.6			
110	55.9		22.5			78.3			
115	40.2		21.2			61.5			
120	32.8					32.8			
125	42.4					42.4			
130									
135									
140	23.0					23.0			
145									
150	61.1					61.1			
175	29.8					29.8			
200									
225									
250									
275									
Total	469.9	37.9	524.4	173.6	71.3	1277.1			
Dead P		8.9					8.9		
			Total Volumes for 7 Levels						
17.5 +	469.9	37.9	524.4	173.6	71.3	1277.1	8.9		
22.5 +	469.9	37.9	524.4	173.6	71.3	1277.1	8.9		
27.5 +	469.9	37.9	524.4	165.4	71.3	1268.9	8.9		
32.5 +	469.9	37.9	524.4	147.0	71.3	1250.5	8.9		
37.5 +	469.9	37.9	524.4	147.0	71.3	1250.5	8.9		
42.5 +	469.9	37.9	480.9	105.9	60.2	1154.8	8.9		
47.5 +	469.9	19.7	445.7	88.1	46.2	1069.6	8.9		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Cutting Permit Basal Area Table (m2/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

FIZ: B
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Version: 2014.00 IFS build 5888

[A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									1.6
25				1.6		1.6			
30				2.1		2.1			
35									
40			5.3	4.1	1.6	10.9			
45		2.1	3.7	1.6	1.6	9.0			
50			1.6	1.6		3.1			
55			6.8			6.8			
60			1.6		2.1	3.7			
65			3.1			3.1			
70	1.6		1.6	1.6		4.7			
75			3.1		2.1	5.3	2.1		
80			3.1			3.1			
85		1.6				1.6			
90	1.6		1.6			3.1			
95	2.1		3.1	1.6		6.8			
100	5.8		3.1	1.6		10.5			
105	5.3		3.1			8.4			
110	3.7		1.6			5.3			
115	3.1		1.6			4.7			
120	2.1					2.1			
125	3.6					3.6			
130									
135									
140	1.6					1.6			
145									
150	4.3					4.3			
175	2.1					2.1			
200									
225									
250									
275									
Total	36.9	3.7	43.8	15.6	7.4	107.4			
Dead P		2.1					2.1		
Dead U									
Live U			1.6						1.6
Average Basal Area (m2) at 5 Levels									
12.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		1.6
17.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		1.6
22.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		
27.5 +	36.9	3.7	43.8	14.0	7.4	105.8	2.1		
32.5 +	36.9	3.7	43.8	11.9	7.4	103.7	2.1		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
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 | 04-Nov-2015 02:42:44PM
ALBERNI VALLEY COM FOREST | Cruiser Est Decay | PSYU: Quadra | Filename: cbts2_2015opc_20151104.ccp
Licence Number: 000 CP: 00 | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: Contour Forest Consultants Inc
Project: TS2 | CGNF Breakage Table | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Block : (M) - 001:CB TS2, Plots in Block: 12, TUs: [A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									63.2
25				33.0		33.0			
30				35.1		35.1			
35									
40			42.5	31.9	13.3	87.7			
45		12.2	23.1	10.7	9.7	55.6			
50			8.6	7.7		16.3			
55			30.7			30.7			
60			5.4		7.2	12.6			
65			8.9			8.9			
70	4.0		4.3	3.8		12.2			
75			7.3		5.0	12.3	4.9		
80			5.9			5.9			
85		2.6				2.6			
90	2.6		2.3			4.9			
95	3.1		4.4	2.2		9.6			
100	7.6		4.0	2.1		13.8			
105	6.1		3.5			9.6			
110	3.9		1.6			5.5			
115	3.1		1.4			4.6			
120	1.9					1.9			
125	2.9					2.9			
130									
135									
140	1.0					1.0			
145									
150	2.4					2.4			
175	0.9					0.9			
200									
225									
250									
275									
Total	39.5	14.8	154.0	126.4	35.2	369.8			
Dead P		4.9					4.9		
Dead U									
Live U			63.2						63.2
Average DBH(cm) at 5 Levels									
12.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		17.7
17.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		17.7
22.5 +	109.1	56.5	60.2	39.6	51.8	60.8	75.0		
27.5 +	109.1	56.5	60.2	43.8	51.8	63.2	75.0		
32.5 +	109.1	56.5	60.2	51.0	51.8	66.1	75.0		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Stock Table (m3/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

FIZ: B
PSYU: Quadra
Region: 2 - West Coast
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Version: 2014.00 IFS build 5888

Block : (M) - 001:CB TS2, Plots in Block: 12, TUs: [A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25				8.2		8.2			
30				18.4		18.4			
35									
40			43.5	41.1	11.1	95.7			
45		18.2	35.2	17.8	14.0	85.1			
50			11.6	17.6		29.2			
55			73.4			73.4			
60			17.7		23.2	40.9			
65			38.6			38.6			
70	17.1		17.2	22.6		57.0			
75			35.2		23.0	58.2	8.9		
80			40.6			40.6			
85		19.7				19.7			
90	18.2		20.8			39.0			
95	22.4		53.0	25.8		101.2			
100	73.4		38.7	22.1		134.3			
105	53.5		55.1			108.6			
110	55.9		22.5			78.3			
115	40.2		21.2			61.5			
120	32.8					32.8			
125	42.4					42.4			
130									
135									
140	23.0					23.0			
145									
150	61.1					61.1			
175	29.8					29.8			
200									
225									
250									
275									
Total	469.9	37.9	524.4	173.6	71.3	1277.1			
Dead P		8.9					8.9		
			Total Volumes for 7 Levels						
17.5 +	469.9	37.9	524.4	173.6	71.3	1277.1	8.9		
22.5 +	469.9	37.9	524.4	173.6	71.3	1277.1	8.9		
27.5 +	469.9	37.9	524.4	165.4	71.3	1268.9	8.9		
32.5 +	469.9	37.9	524.4	147.0	71.3	1250.5	8.9		
37.5 +	469.9	37.9	524.4	147.0	71.3	1250.5	8.9		
42.5 +	469.9	37.9	480.9	105.9	60.2	1154.8	8.9		
47.5 +	469.9	19.7	445.7	88.1	46.2	1069.6	8.9		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Basal Area Table (m2/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Version: 2014.00   IFS build 5888

Block : (M) - 001:CB TS2, Plots in Block: 12,   TUs: [A : 9.9]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									1.6
25				1.6		1.6			
30				2.1		2.1			
35									
40			5.3	4.1	1.6	10.9			
45		2.1	3.7	1.6	1.6	9.0			
50			1.6	1.6		3.1			
55			6.8			6.8			
60			1.6		2.1	3.7			
65			3.1			3.1			
70	1.6		1.6	1.6		4.7			
75			3.1		2.1	5.3	2.1		
80			3.1			3.1			
85		1.6				1.6			
90	1.6		1.6			3.1			
95	2.1		3.1	1.6		6.8			
100	5.8		3.1	1.6		10.5			
105	5.3		3.1			8.4			
110	3.7		1.6			5.3			
115	3.1		1.6			4.7			
120	2.1					2.1			
125	3.6					3.6			
130									
135									
140	1.6					1.6			
145									
150	4.3					4.3			
175	2.1					2.1			
200									
225									
250									
275									
Total	36.9	3.7	43.8	15.6	7.4	107.4			
Dead P		2.1					2.1		
Dead U									
Live U			1.6						1.6
Average Basal Area (m2) at 5 Levels									
12.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		1.6
17.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		1.6
22.5 +	36.9	3.7	43.8	15.6	7.4	107.4	2.1		
27.5 +	36.9	3.7	43.8	14.0	7.4	105.8	2.1		
32.5 +	36.9	3.7	43.8	11.9	7.4	103.7	2.1		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
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 | 04-Nov-2015 02:42:44PM
ALBERNI VALLEY COM FOREST | Cruiser Est Decay | PSYU: Quadra | Filename: cbts2_2015opc_20151104.ccp
Licence Number: 000 CP: 00 | Cruiser Est Waste | Region: 2 - West Coast | Compiled by: Contour Forest Consultants Inc
Project: TS2 | CGNF Breakage Table | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Type 1 (M):FdHw (BaCy), Plots in Type: 1, TUs: [A : 0.5]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40				160.0		160.0			
45									
50									
55									
60									
65									
70									
75									
80									
85									
90									
95									
100									
105									
110									
115									
120									
125	33.1					33.1			
130									
135									
140									
145									
150									
175									
200									
225									
250									
275									
Total	33.1			160.0		193.1			
Dead P									
Dead U									
Live U									
			Average DBH(cm) at 5 Levels						
12.5 +	124.0			39.9		62.9			
17.5 +	124.0			39.9		62.9			
22.5 +	124.0			39.9		62.9			
27.5 +	124.0			39.9		62.9			
32.5 +	124.0			39.9		62.9			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stand Table (stems/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Type 2 (M):FdHw(CyCwBa), Plots in Type: 2, TUs: [A : 1.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30				204.5		204.5			
35									
40			95.1			95.1			
45		70.8	75.5			146.4			
50									
55			54.4			54.4			
60					41.9	41.9			
65									
70									
75					29.4	29.4	28.3		
80									
85									
90									
95	17.8					17.8			
100	32.4					32.4			
105	14.2					14.2			
110	12.9					12.9			
115									
120	10.9					10.9			
125									
130									
135									
140									
145									
150	13.7					13.7			
175	5.3					5.3			
200									
225									
250									
275									
Total	107.2	70.8	225.1	204.5	71.3	678.9			
Dead P		28.3					28.3		
Dead U									
Live U									
			Average DBH(cm) at 5 Levels						
12.5 +	115.6	47.4	46.1	27.9	66.8	61.2	75.0		
17.5 +	115.6	47.4	46.1	27.9	66.8	61.2	75.0		
22.5 +	115.6	47.4	46.1	27.9	66.8	61.2	75.0		
27.5 +	115.6	47.4	46.1	27.9	66.8	61.2	75.0		
32.5 +	115.6	47.4	46.1		66.8	70.9	75.0		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stand Table (stems/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00   IFS build 5888

Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [A : 7.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									81.3
25				42.4		42.4			
30									
35									
40			33.7	30.6	17.1	81.3			
45			13.0	13.7	12.4	39.2			
50			11.1	9.9		20.9			
55			27.4			27.4			
60			6.9			6.9			
65			11.4			11.4			
70	5.2		5.6	4.9		15.7			
75			9.4			9.4			
80			7.6			7.6			
85		3.4				3.4			
90	3.3		3.0			6.3			
95			5.6	2.8		8.4			
100	2.7		5.2	2.7		10.6			
105	4.7		4.5			9.2			
110	2.2		2.1			4.3			
115	4.0		1.9			5.9			
120									
125	1.6					1.6			
130									
135									
140	1.3					1.3			
145									
150									
175									
200									
225									
250									
275									
Total	25.0	3.4	148.3	107.0	29.5	313.1			
Dead P									
Dead U									
Live U			81.3						81.3
Average DBH(cm) at 5 Levels									
12.5 +	101.0	87.0	64.2	43.6	41.6	60.5			17.7
17.5 +	101.0	87.0	64.2	43.6	41.6	60.5			17.7
22.5 +	101.0	87.0	64.2	43.6	41.6	60.5			
27.5 +	101.0	87.0	64.2	52.5	41.6	64.3			
32.5 +	101.0	87.0	64.2	52.5	41.6	64.3			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stock Table (m3/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00   IFS build 5888

Type 1 (M):FdHw (BaCy), Plots in Type: 1, TUs: [A : 0.5]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40				207.7		207.7			
45									
50									
55									
60									
65									
70									
75									
80									
85									
90									
95									
100									
105									
110									
115									
120									
125	395.6					395.6			
130									
135									
140									
145									
150									
175									
200									
225									
250									
275									
Total	395.6			207.7		603.3			
Dead P									
			Total Volumes for 7 Levels						
17.5 +	395.6			207.7		603.3			
22.5 +	395.6			207.7		603.3			
27.5 +	395.6			207.7		603.3			
32.5 +	395.6			207.7		603.3			
37.5 +	395.6			207.7		603.3			
42.5 +	395.6					395.6			
47.5 +	395.6					395.6			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stock Table (m3/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Filename: cbts2_2015opc_20151104.ccp
Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00 IFS build 5888

Type 2 (M):FdHw(CyCwBa), Plots in Type: 2, TUs: [A : 1.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30				106.9		106.9			
35									
40			100.1			100.1			
45		105.9	117.8			223.7			
50									
55			145.4			145.4			
60					135.2	135.2			
65									
70									
75					133.8	133.8	51.6		
80									
85									
90									
95	130.3					130.3			
100	303.0					303.0			
105	119.5					119.5			
110	189.7					189.7			
115									
120	191.0					191.0			
125									
130									
135									
140									
145									
150	355.9					355.9			
175	173.8					173.8			
200									
225									
250									
275									
Total	1463.1	105.9	363.4	106.9	269.0	2308.2			
Dead P		51.6					51.6		
			Total Volumes for 7 Levels						
17.5 +	1463.1	105.9	363.4	106.9	269.0	2308.2	51.6		
22.5 +	1463.1	105.9	363.4	106.9	269.0	2308.2	51.6		
27.5 +	1463.1	105.9	363.4	106.9	269.0	2308.2	51.6		
32.5 +	1463.1	105.9	363.4		269.0	2201.3	51.6		
37.5 +	1463.1	105.9	363.4		269.0	2201.3	51.6		
42.5 +	1463.1	105.9	263.3		269.0	2101.2	51.6		
47.5 +	1463.1		145.4		269.0	1877.5	51.6		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Stock Table (m3/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Version: 2014.00 IFS build 5888

Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [A : 7.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25				10.5		10.5			
30									
35									
40			33.9	39.4	14.3	87.5			
45			19.2	22.9	18.0	60.1			
50			15.0	22.6		37.6			
55			62.3			62.3			
60			22.8			22.8			
65			49.6			49.6			
70	22.0		22.1	29.1		73.3			
75			45.3			45.3			
80			52.2			52.2			
85		25.4				25.4			
90	23.3		26.8			50.1			
95			68.1	33.2		101.4			
100	27.5		49.8	28.4		105.7			
105	42.4		70.8			113.2			
110	29.9		28.9			58.8			
115	51.7		27.3			79.0			
120									
125	28.8					28.8			
130									
135									
140	29.5					29.5			
145									
150									
175									
200									
225									
250									
275									
Total	255.4	25.4	594.0	186.1	32.3	1093.1			
Dead P									
			Total Volumes for 7 Levels						
17.5 +	255.4	25.4	594.0	186.1	32.3	1093.1			
22.5 +	255.4	25.4	594.0	186.1	32.3	1093.1			
27.5 +	255.4	25.4	594.0	175.6	32.3	1082.6			
32.5 +	255.4	25.4	594.0	175.6	32.3	1082.6			
37.5 +	255.4	25.4	594.0	175.6	32.3	1082.6			
42.5 +	255.4	25.4	560.1	136.2	18.0	995.1			
47.5 +	255.4	25.4	540.9	113.3		935.1			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Basal Area Table (m2/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Compiled by: Contour Forest Consultants Inc
Cruised by: CONTOUR FOREST CONSULTANTS INC
Version: 2014.00   IFS build 5888

Type 1 (M):FdHw (BaCy), Plots in Type: 1, TUs: [A : 0.5]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40				20.0		20.0			
45									
50									
55									
60									
65									
70									
75									
80									
85									
90									
95									
100									
105									
110									
115									
120									
125	40.0					40.0			
130									
135									
140									
145									
150									
175									
200									
225									
250									
275									
Total	40.0			20.0		60.0			
Dead P									
Dead U									
Live U									

Average Basal Area (m2) at 5 Levels

12.5 +	40.0	20.0	60.0	
17.5 +	40.0	20.0	60.0	
22.5 +	40.0	20.0	60.0	
27.5 +	40.0	20.0	60.0	
32.5 +	40.0	20.0	60.0	

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Basal Area Table (m2/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Type 2 (M):FdHw(CyCwBa), Plots in Type: 2, TUs: [A : 1.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									
25									
30				12.5		12.5			
35									
40			12.5			12.5			
45		12.5	12.5			25.0			
50									
55			12.5			12.5			
60					12.5	12.5			
65									
70									
75					12.5	12.5	12.5		
80									
85									
90									
95	12.5					12.5			
100	25.0					25.0			
105	12.5					12.5			
110	12.5					12.5			
115									
120	12.5					12.5			
125									
130									
135									
140									
145									
150	25.0					25.0			
175	12.5					12.5			
200									
225									
250									
275									
Total	112.5	12.5	37.5	12.5	25.0	200.0			
Dead P		12.5					12.5		
Dead U									
Live U									
	Average Basal Area (m2) at 5 Levels								
12.5 +	112.5	12.5	37.5	12.5	25.0	200.0	12.5		
17.5 +	112.5	12.5	37.5	12.5	25.0	200.0	12.5		
22.5 +	112.5	12.5	37.5	12.5	25.0	200.0	12.5		
27.5 +	112.5	12.5	37.5	12.5	25.0	200.0	12.5		
32.5 +	112.5	12.5	37.5		25.0	187.5	12.5		

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type Basal Area Table (m2/ha)

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [A : 7.7]

	F	C	H	B	YC	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
DBH Class									
5									
10									
15									
20									2.0
25				2.0		2.0			
30									
35									
40			4.0	4.0	2.0	10.0			
45			2.0	2.0	2.0	6.0			
50			2.0	2.0		4.0			
55			6.0			6.0			
60			2.0			2.0			
65			4.0			4.0			
70	2.0		2.0	2.0		6.0			
75			4.0			4.0			
80			4.0			4.0			
85		2.0				2.0			
90	2.0		2.0			4.0			
95			4.0	2.0		6.0			
100	2.0		4.0	2.0		8.0			
105	4.0		4.0			8.0			
110	2.0		2.0			4.0			
115	4.0		2.0			6.0			
120									
125	2.0					2.0			
130									
135									
140	2.0					2.0			
145									
150									
175									
200									
225									
250									
275									
Total	20.0	2.0	48.0	16.0	4.0	90.0			
Dead P									
Dead U									
Live U			2.0						2.0
Average Basal Area (m2) at 5 Levels									
12.5 +	20.0	2.0	48.0	16.0	4.0	90.0			2.0
17.5 +	20.0	2.0	48.0	16.0	4.0	90.0			2.0
22.5 +	20.0	2.0	48.0	16.0	4.0	90.0			
27.5 +	20.0	2.0	48.0	14.0	4.0	88.0			
32.5 +	20.0	2.0	48.0	14.0	4.0	88.0			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Full Volumes, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Plot Summary

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Version: 2014.00 IFS build 5888

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-FdHw (BaCy)	001	2	2	20.000F	90	Balsam	1	159.95	39.90	238.16	220.83	207.71	207.71				
						Doug-Fir	2	33.12	124.00	427.50	417.77	395.64	395.64				
						All Sp.	3	193.08	62.90	665.66	638.60	603.35	603.35	1511			
2-FdHw(CyCwBa)	001	2	3	25.000F	108	W.R. Cedar	1	56.59	75.00	167.43	133.24	121.50	103.13				
						E-Down	1	56.59	75.00	167.43	133.24	121.50	103.13				
						Doug-Fir	7	146.40	123.37	2596.26	2532.10	2397.69	2386.79				
						Hemlock	2	299.04	46.14	549.13	521.64	491.10	491.10				
						All Sp.	10	502.03	79.63	3312.82	3186.98	3010.28	2981.01	1511			
		2	4	25.000F	52	Balsam	1	408.92	27.90	248.23	227.45	213.77	213.77				
						W.R. Cedar	1	141.68	47.40	245.81	240.48	224.44	211.73				
						Doug-Fir	2	67.98	96.77	582.85	569.59	539.41	539.41				
						Hemlock	1	151.09	45.90	265.31	250.44	235.68	235.68				
						Y. Cedar	2	142.65	66.80	607.09	578.53	537.93	537.93				
						All Sp.	7	912.31	49.42	1949.28	1866.49	1751.23	1738.52	1511			
3-HwFd(BaCyCw)	001	2	5	18.000F	108	W.R. Cedar	1	30.28	87.00	245.85	244.47	228.42	228.42				
						Doug-Fir	4	112.17	90.40	1067.90	1043.60	988.31	922.22				
						Hemlock	3	132.89	71.93	867.50	824.08	775.82	775.82				
						All Sp.	8	275.34	81.60	2181.25	2112.15	1992.56	1926.46	1511			
		2	6	18.000F	64	Doug-Fir	3	51.99	115.00	829.01	810.14	767.22	767.22				
						Hemlock	1	20.51	105.70	392.05	370.50	348.69	348.69				
						All Sp.	4	72.51	112.44	1221.06	1180.64	1115.91	1115.91	1511			
		2	8	18.000F	113	Balsam	2	525.77	29.53	349.75	326.62	307.35	307.35				
						Hemlock	1	16.66	117.30	274.71	260.95	245.67	245.67				
						All Sp.	3	542.43	35.60	624.46	587.57	553.01	553.01	1511			
		2	9	18.000F	69	Balsam	1	25.13	95.50	342.62	317.97	299.09	299.09				
						Doug-Fir	1	18.11	112.50	253.06	240.38	227.28	227.28				
						Hemlock	4	149.99	78.18	1035.26	973.23	915.63	897.83				
						All Sp.	6	193.23	84.36	1630.94	1531.57	1442.00	1424.19	1511			
		2	10	18.000F	78	Hemlock	3	80.44	92.45	886.87	809.01	759.67	741.15				
						All Sp.	3	80.44	92.45	886.87	809.01	759.67	741.15	1511			
		2	11	18.000F	52	Doug-Fir	2	42.30	104.10	412.61	403.22	381.86	381.86				
						Hemlock	4	501.81	42.74	785.90	743.09	697.61	697.61				
						Y. Cedar	2	265.50	41.55	334.16	313.02	290.66	290.66				
						All Sp.	8	809.61	47.59	1532.68	1459.32	1370.13	1370.13	1511			
		2	12	18.000F	40	Hemlock	4	163.24	74.94	971.11	919.67	865.65	865.10				
						All Sp.	4	163.24	74.94	971.11	919.67	865.65	865.10	1511			
		2	13	18.000F	55	Balsam	1	44.46	71.80	297.97	278.26	261.84	261.84				
						Hemlock	4	269.21	58.36	903.75	824.33	774.06	774.06				
						All Sp.	5	313.66	60.44	1201.71	1102.59	1035.90	1035.90	1511			
		2	14	18.000F	95	Balsam	4	367.46	49.95	952.93	868.04	815.53	806.42				
						Hemlock	1	731.54	17.70								
						All Sp.	5	1099.00	32.29	952.93	868.04	815.53	806.42	1511			

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

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

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Version: 2014.00   IFS build 5888

Measure Plots

Blocks	Timber Type 1	2	3
BLOCK 001 (M)			
# of Plots	1	2	9
ha / Plot	0.50	0.85	0.86
Cutting Permit			
# of Plots	1	2	9
ha / Plot	0.50	0.85	0.86

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

Plot Frequency Report

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

FIZ: B
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Measure Plots

Harvest Methods	Timber Type 1	2	3
METHOD CC			
# of Plots		1	
ha / Plot		0.40	
METHOD HL			
# of Plots		1	1
ha / Plot		1.30	0.50
METHOD SC			
# of Plots	1		8
ha / Plot	0.50		0.90
All Methods			
# of Plots	1	2	9
ha / Plot	0.50	0.85	0.86

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

Plot Frequency Report

Average Line Method
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

FIZ: B
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Version: 2014.00   IFS build 5888

Count Plots

Blocks	Timber Type 1	2	3
BLOCK 001 (M)			
# 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
ALBERNI VALLEY COM FOREST
Licence Number: 000 CP: 00
Project: TS2

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

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

04-Nov-2015 02:42:44PM
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Version: 2014.00   IFS build 5888

Count Plots

Harvest Methods	Timber Type 1	2	3
METHOD CC			
# of Plots			
ha / Plot			
METHOD HL			
# of Plots			
ha / Plot			
METHOD SC			
# of Plots			
ha / Plot			
All Methods			
# of Plots			
ha / Plot			

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

COMMUNITY FOREST AGREEMENT K2D

CUTTING PERMIT NO. 009

Ministry of Forests, Lands and Natural Resource Operations

PURSUANT TO the Community Forest Agreement No. **K2D** (the "Agreement"), this Cutting Permit is issued to:

ALBERNI VALLEY COMMUNITY FOREST CORPORATION
7500 Airport Road
Port Alberni, British Columbia
V9Y 8Y9
(the "Agreement Holder")

1.00 PERMIT AREA AND TERM

1.01 Subject to the Agreement and the Forestry Legislation, the Agreement Holder is authorized to cut and Remove timber from the areas of lands within the Agreement Area that are designated on the map attached as Exhibit "A" to this Cutting Permit.

1.02 Subject to the Agreement, the term of this Cutting Permit is **4** years, beginning on the date signed by the District Manager (See Page 3)**.**

2.00 SPECIAL CONDITIONS AND REQUIREMENTS

2.01 The Agreement Holder must comply with the conditions and requirements set out in Schedule "A" to this Cutting Permit.

3.00 TIMBER REMOVED AND WASTE ASSESSMENT

3.01 The timber described in Schedule “B” is specified as reserved timber and the Agreement Holder must not fell standing timber, and must not buck or Remove felled or dead and down timber, as the case may be, of the species and description set out in Schedule “B”.

4.00 TIMBER MARKS

4.01 The timber mark(s) for timber Removed from land identified as Schedule B Land in the Agreement under this Cutting Permit is/are:

K2D
009

4.02 The timber mark for timber Removed from land identified as Schedule A Land in the Agreement under this Cutting Permit is/are: **Not Applicable**

4.03 If directed to do so by the District Manager, the Agreement Holder must erect signs at all exits from the areas of land referred to in paragraph 1.01, clearly showing the timber mark(s) referred to in paragraphs 4.01 and 4.02.

5.00 SCALE-BASED STUMPAGE

5.01 The Agreement Holder must ensure that

(a) all timber Removed from the areas of land referred to in paragraph 1.01 is scaled, and

(b) the scale of the timber is conducted properly in accordance with the requirements of the *Forest Act* and the regulations made under that Act.

5.02 For the purpose of determining the amount of stumpage payable in respect of timber Removed from the areas of Schedule B Land in the Agreement, authorized for cutting and Removal under this Cutting Permit, the volume or quantity of timber Removed will be determined using information provided in a scale of the timber.

6.00 ROADS

Subject to the Agreement and the Forestry Legislation, the Agreement Holder may use, construct, modify, maintain or deactivate roads on the area covered by this Cutting Permit.

7.00 HARVESTING OPERATIONS

7.01 The Agreement Holder must ensure that

(a) all phases of timber cutting and Removal and related operations under or associated with this Cutting Permit are synchronized, and

(b) all operations on one area designated for cutting and Removal of timber under this Cutting Permit is completed to the satisfaction of the District Manager before operations are commenced on another area.

7.02 The Agreement Holder must not erect or operate a sawmill or wood processing plant on an area of land referred to in paragraph 1.01 of this Cutting Permit.

7.03 The rights granted under this Cutting Permit are subject to other rights of use and occupation, and the Agreement Holder must not interfere with the exercise of those rights.

7.04 The Agreement Holder must not allow the manufacture of special forest products on the area of land described in paragraph 1.01 of this Cutting Permit, unless authorized to do so by the District Manager.

MISCELLANEOUS

8.01 The Schedules and Exhibit "A" to this Cutting Permit are deemed to be part of this Cutting Permit.

8.02 As provided in the Agreement, this Cutting Permit is deemed to be part of the Agreement.

8.03 The Agreement governs the interpretation of this Cutting Permit.

SCHEDULE "A"
SPECIAL CONDITIONS AND REQUIREMENTS

1.00 TIMING OF OPERATIONS

The Licensee must ensure that all phases of timber harvesting and related operations under or associated with this Cutting Permit are synchronized.

2.00 ORDERLY CONDITION

The Licensee shall, concurrently with harvesting operations, leave all areas in an orderly and sanitary condition.

3.00 DANGEROUS TREES

3.01 The Licensee may fell trees outside of the cutblock boundary(s) identified on the attached map as Exhibit "A", for the purposes of tree felling to eliminate a safety hazard, if the person conducting tree felling or rigging tail hold/anchor trees determines that the tree is a dangerous tree according to Work Safe BC regulations and it is within 50 metres beyond the cutting authority area.

3.02 No authorization is given to fell, damage, alter or utilize timber located outside of the boundaries of Crown land associated with Community Forest Licence K2D.

4.00 TIMBER MARKS

4.01 In reference to paragraph 4.03 of the Cutting Permit, the Licensee must erect timber mark signs at all exits from the area of land or at changes of timber marks within the area of land referred to in the Cutting Permit paragraph 1.01, clearly showing the appropriate timber marks.

4.02 Harvesting operations must be conducted in a manner ensuring the accurate application of timber marks to timber to the satisfaction of the District Manager.

5.00 OTHER OCCUPIERS OF LAND

The rights granted under this Permit are subject to other rights of use and occupation and the Licensee must not interfere with exercise of those rights.

SCHEDULE "B"

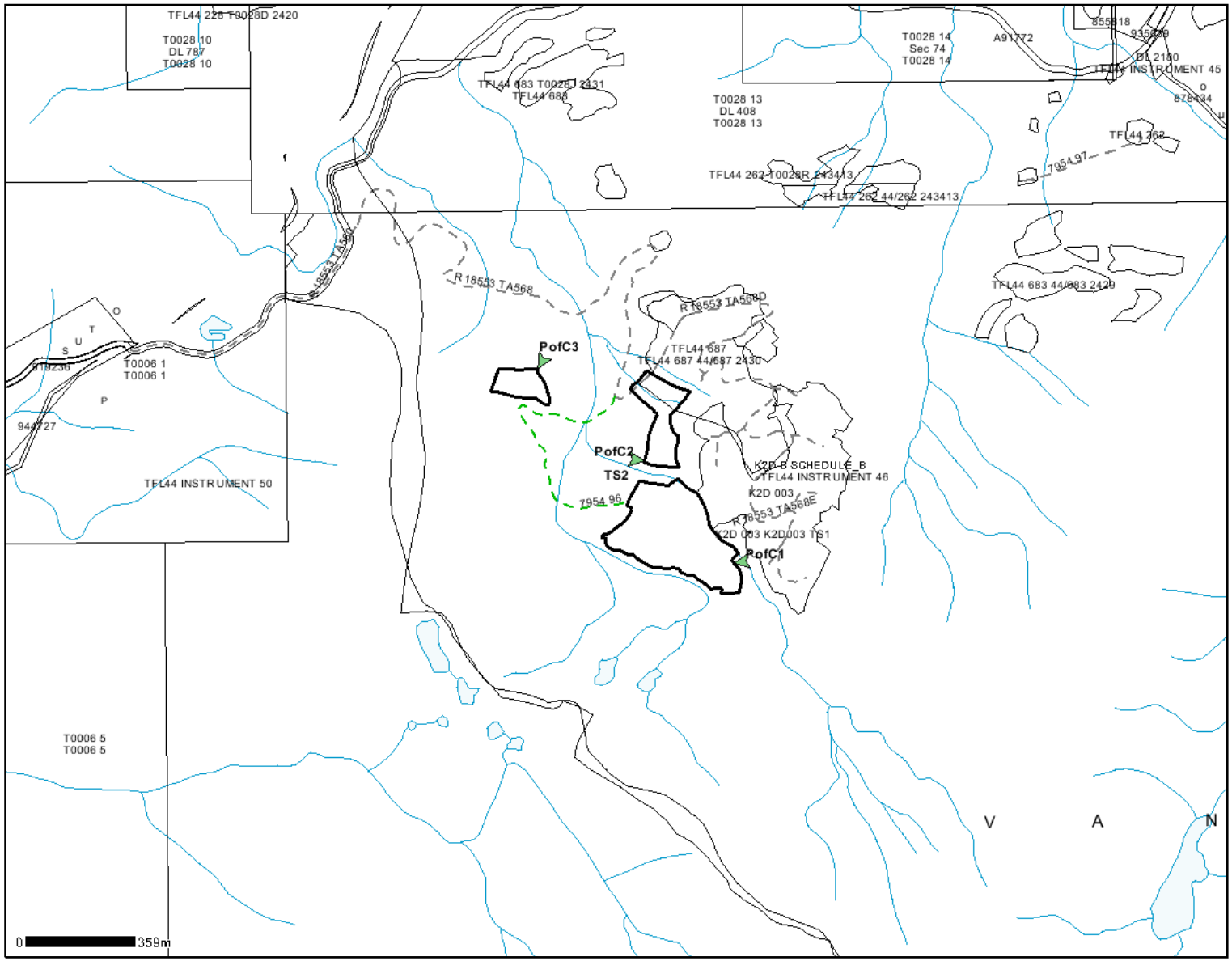
1.00 RESERVED TIMBER

1.01 The following timber is specified as reserved timber:

Cutblock	Description (size, etc.)
TS2	All sizes and grades of timber, whether fallen or standing, dead or alive, within areas shown as "Timber Leave Area" on the 1:5000 scale "Cutting Permit Map" attached to this Cutting Permit are reserved from felling. All sizes and grades of timber, whether fallen or standing, dead or live, within areas shown as 3.9% "Dispersed Retention" on the 1:5000 application 'Cutting Permit Map' for cutblock TS2 attached to this Cutting Permit are reserved timber except in the following circumstances: (a) If the person conducting tree felling or rigging tailhold/anchor trees determines that a tree represents a safety hazard according to Work Safe BC standards. Unless otherwise reserved from removal or harvesting in the applicable forest stewardship plan, any felled safety hazard trees may be removed. (b) Cutblock TS2 has been designed as a combination of small clearcut's and one polygon with a "Retention" silviculture system which consists of 3.9% of the timber being retained within eight small groups of leave trees. These groups of three to eight trees are uniformely dispersed within the harvest area as detailed in the attached tables titled "Leave Tree Report."

EXHIBIT A

MAP OF : K2D CP 009 (shown in bold black)			
FOREST REGION : RWC FOREST DISTRICT : DSI	TSA : 38 LAND DISTRICT : CLAYOQUOT DISTRICT	PULPWOOD AGREEMENT :	MGT UNIT TYPE : COMMUNITY FOREST MGT UNIT NO :
ESF SUBMISSION ID : 1467846 BCGS MAPSHEET NO : 92F.024	SCALE : 1:20000 at A Size Area (Ha): 13.537	UTM : 10 NAD : NAD 83	DRAWN BY : FTA DATE : Dec 9, 2015



Legend

- Tenure Application
- Tenure Road Application
- Retired Tenure Road
- P of C
- P of T
- Tenure Feature
- Range
- TFL
- Provincial Forest
- Forest Service Road
- Highway
- Municipal Road
- Non Status Road
- Recreation Trails
- Road Permit
- SUP Road
- Right of Way
- Schedule B CP Road
- Mineral Tenure Points
- Cities
- Waterbodies
- River/Stream
- Coastline / Island

TS2 (13.537 Ha)
PofC1 UTM10 330629, 5460423
PofC2 UTM10 330351, 5460770
PofC3 UTM10 330015, 5461084

Due Diligence

Two falling corners and/or road stations must be referenced in the field with the release map on a continual basis before, and during the felling of any timber within this setting. If you are unsure of your location, Stop Work and call a supervisor.

Forest and Range Practices Act

How to follow plan:

1) Always read and understand your plans and maps.
2) Always match your plan and map to what you find on the ground and then check that you can do the work.
3) Stop and ask if you cannot follow the plan and map.
4) Know your responsibilities. Ask if you are unsure.

Due Dilligence means following these steps.

Timbermarking requirements:
All decked timber must be sufficiently marked (at least 10%) when the setting is inactive.

Safety Coordinates
Latitude: 49°16'33"N
Longitude: 125°19'57"W

Field Marking Standards:

Activity	Ribbon	Paint
Falling Boundary	FALLING BOUNDARY	●
Internal Boundaries	FALLING BOUNDARY	●
Reconnaissance Lines		
Traverse Stations (All)		
Cruise Strips / Plots		
Road Location	ROAD LOCATION	●
Culturally Modified Tree	CMT	
Landings / Tower Settings		
Deflection Lines		
Streams		
Reserve Zones (All)	FALLING BOUNDARY	●
Management Zones (All)		
Reserve Trees (Painted)	L	●

Riparian Class	RMZ	RRZ
S1	20	50
S2	20	30
S3	20	20
S4	30	0
S5	30	0
S6	20	0
W1	40	10
W2	20	10
W3	30	0
W4	30	0
W5	40	10
L1	0	10
L2	20	10
L3	30	0
L4	30	0

ALBERNI VALLEY COMMUNITY FOREST

CUTTING PERMIT MAP

Cutblock: TS2

Forest Region: Coast
Forest District: South Island
Land District: Clayoquot
Forest Inventory Zone: C
Cascades: West C
Tenure: K2D
Geographic Coordinates:
Lat:49° 16' 32"
Long:125° 20' 01"
Author: A. Furey
Print Date: 25 -May -2016

Scale: 1:5,000
N
Datum: NAD83
Mapsheet: 92F.024
Map Revision:
Revised Date: dd-mmm-yyyy

MAP LEGEND

Boundary Features:
Falling Boundary
Heli Splitline
Adjacent Block-Planned
Harvested
Legal Boundary
Pruning
Feathering
Road Features:
Built Road
Deactivated Road
Proposed Road
Backspar Trail
Recreation Trail
Bridge
Road Station
Existing Culvert
New Culvert
Culvert to be replaced
Natural Features:
Windthrow
Snag
Swamp
Slide
Rock Bluff
Rock
Resource Features:
PSP
Single Tree Retention
Monumental Cedar
Archaeological Feature/CMT
Quarry/Gravel Pit
Bear Den/Bird Nest
Helipad/Service Landing
Index Contour
Intermediate Contour
Riparian Features:
Fish Streams (S1-S4)
Non Fish streams (S5, S6)
Unclassified Creek
Non Classified Drainage
Gully
FSZ Stream
Reach Break/Fish Barrier
Stream ID
Lakes/Wetlands:
Lakes Class 1, 2, 3, 4
Wetlands Class 1, 2, 3, 4, 5
Sensitive and Designated Areas:
Wildlife Tree Retention Area
Timber Leave Area
Legal OGMA

Cutting Permit:
CP Gross Area
CP Net Area

K2D 0R1
K2D 009
K2D
K2D
Hammermark for outside R/W only

Individual leave tree group is distributed throughout the harvest area.
3.9% Dispersed Retention

CUTTING PERMIT	TIMBERMARK		Total
	K2D/009	K2D/0R1	
Cutting Permit Cruise Volume (m3)	10349	2271	12620
Cutting Permit Exhibit "A" Net Area to Harvest (ha)	8.2	0.0	8.2
Wildlife Tree Retention Area (ha)	1.1	0.0	1.1
Timbered Leave Area (ha)	1.2	0.0	1.2
Area Approved under Road Permit (ha)	0.0	1.8	1.8
Harvested Block	1.1	0.0	1.1
Cutting Authority (Gross) Area (ha)	11.6	1.8	13.4

Prepared By:
MERIDIAN Forest Services Ltd.
PO Box 275
#15-1010 Shearme Road
Coombs, BC V0R 1M0
www.meridianforest.ca

MAP 1 of 1 | **Cutting Permit: 009** | **Road Permit: R18553** | **TS2 - TAYLOR MT. ADDER**

ALBERNI VALLEY COM FOREST

K2D - CP# PRE

Mount Taylor
Block #: TS2

SUMMARY OF VOLUMES (loss factors)
L E A V E T R E E R E P O R T

03-May-2016 11:34:03AM

Cruised by: CONTOUR FOREST CONSULTANTS INC
Compiled by: F Warren and Associates Ltd

Block Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 03-May-2016 11:34:03AM
ALBERNI VALLEY COM FOREST | Computerized Decay | PSYU: Nootka | Filename: TS2.ccp
Licence Number: K2D CP: PRE | Computerized Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: TS2 | Computerized Breakage | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS IN
Version: 2015.00 IFS build 5947

Net Area: Block : (M) - 001:TS2, Plots in Block: 12, TUs: [All Treatment Units : 10.0]

		Total	Conifer	Decid	F	C	H	B	Y
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					10.0	10.0	10.0	10.0	10.0
Volume and Size Data									
Gross Merchantable	m3	378	378		179	8	178	10	3
Net Merchantable	m3	336	336		167	5	153	9	2
Net Merch - All	m3/ha	34	34		17	1	15	1	0
Distribution	%	100	100		50	2	46	3	1
Decay	%	5	5		2	18	7	5	11
Waste	%	1	1		0	9	2	1	0
Waste(billing)	%	1	1		0	14	2	1	0
Breakage	%	6	6		5	7	6	5	7
Total Cull (DWB)	%	11	11		7	35	14	11	18
Stems/Ha (Live & DP)		4.5	4.5		1.3	0.1	2.8	0.2	0.2
Avg DBH (Live & DP)	cm	83.0	83.0		104.7	87.0	74.0	64.2	45.3
Snags/Ha									
Avg Snag DBH	cm								
Gross Merch Vol/Tree	m3	8.32	8.32		13.71	7.69	6.47	5.13	1.58
Net Merch Vol/Tree	m3	7.39	7.39		12.75	5.03	5.55	4.55	1.29
Avg Weight Total Ht	m	50.9	50.9		58.9	46.3	44.3	40.4	26.1
Avg Weight Merch Ht	m	44.9	44.9		53.4	39.0	37.2	34.9	19.7
Avg 10.0 m Log Net	m3	2.08	2.08		2.53	1.39	1.86	1.34	0.70
Avg 10.0 m Log Gross	m3	2.20	2.20		2.59	1.92	2.03	1.42	0.79
Avg # of 10.0 m Logs/Tree		3.78	3.78		5.30	4.00	3.19	3.60	2.00
Net Immature	%								
Net 2nd Growth	%								
Average Slope	%	77							
Algorithm Grades %									
#1 Lum/#1 Prem	D	16	16		30		4		
#2 Lum/#1 Lum	F								
#2 Sawlog	H	21	21		13	50	29	36	
#3 Sawlog	I	42	42		44	19	38	37	
#4 Sawlog	J	4	4				8	7	
#4 Shingle	M					9			
#5 Utility	U	12	12		8	22	16	20	
#6 Utility	X	1	1				2		100
#7 Chipper	Y	4	4		5		3		
Statistical Summary									
Coeff. of Variation	%	112.0	112.0		229.2	346.4	81.8	277.8	346.4
Two Standard Error	%	73.1	73.1		149.7	226.2	53.4	181.4	226.2
Number and Type of Plots		MP = 12							
Number of Potential Trees		65							
Plots/Ha		1.2							
Cruised Trees/Plot		5.5							

Slope % Statistics

Min= 40, Max=113, CV=32.9, Std Error of Mean=7.3, 2SE%=20.9

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***

FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 03-May-2016 11:34:03AM
ALBERNI VALLEY COM FOREST | Computerized Decay | PSYU: Nootka | Filename: TS2.ccp
Licence Number: K2D CP: PRE | Computerized Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: TS2 | Computerized Breakage | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS IN
Version: 2015.00 IFS build 5947

Net Area: Block : (M) - 001:TS2, Plots in Block: 12, TUs: [A Block : 9.9]

		Total	Conifer	Decid	F	C	H	B	Y
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					10.0	10.0	10.0	10.0	10.0
Volume and Size Data									
Gross Merchantable	m3	378	378		179	8	178	10	3
Net Merchantable	m3	336	336		167	5	153	9	2
Net Merch - All	m3/ha	34	34		17	1	15	1	0
Distribution	%	100	100		50	2	46	3	1
Decay	%	5	5		2	18	7	5	11
Waste	%	1	1		0	9	2	1	0
Waste(billing)	%	1	1		0	14	2	1	0
Breakage	%	6	6		5	7	6	5	7
Total Cull (DWB)	%	11	11		7	35	14	11	18
Stems/Ha (Live & DP)		4.6	4.6		1.3	0.1	2.8	0.2	0.2
Avg DBH (Live & DP)	cm	83.0	83.0		104.7	87.0	74.0	64.2	45.3
Snags/Ha									
Avg Snag DBH	cm								
Gross Merch Vol/Tree	m3	8.32	8.32		13.71	7.69	6.47	5.13	1.58
Net Merch Vol/Tree	m3	7.39	7.39		12.75	5.03	5.55	4.55	1.29
Avg Weight Total Ht	m	50.9	50.9		58.9	46.3	44.3	40.4	26.1
Avg Weight Merch Ht	m	44.9	44.9		53.4	39.0	37.2	34.9	19.7
Avg 10.0 m Log Net	m3	2.08	2.08		2.53	1.39	1.86	1.34	0.70
Avg 10.0 m Log Gross	m3	2.20	2.20		2.59	1.92	2.03	1.42	0.79
Avg # of 10.0 m Logs/Tree		3.78	3.78		5.30	4.00	3.19	3.60	2.00
Net Immature	%								
Net 2nd Growth	%								
Average Slope	%	77							
Algorithm Grades %									
#1 Lum/#1 Prem	D	16	16		30		4		
#2 Lum/#1 Lum	F								
#2 Sawlog	H	21	21		13	50	29	36	
#3 Sawlog	I	42	42		44	19	38	37	
#4 Sawlog	J	4	4				8	7	
#4 Shingle	M					9			
#5 Utility	U	12	12		8	22	16	20	
#6 Utility	X	1	1				2		100
#7 Chipper	Y	4	4		5		3		
Statistical Summary									
Coeff. of Variation	%	112.0	112.0		229.2	346.4	81.8	277.8	346.4
Two Standard Error	%	73.1	73.1		149.7	226.2	53.4	181.4	226.2
Number and Type of Plots		MP = 12							
Number of Potential Trees		65							
Plots/Ha		1.2							
Cruised Trees/Plot		5.5							

Slope % Statistics

Min= 40, Max=113, CV=32.9, Std Error of Mean=7.3, 2SE%=20.9

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***

FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Block Summary

Average Line Method | Grades: MOF Computerized | FIZ: B | 03-May-2016 11:34:03AM
ALBERNI VALLEY COM FOREST | Computerized Decay | PSYU: Nootka | Filename: TS2.ccp
Licence Number: K2D CP: PRE | Computerized Waste | Region: 2 - West Coast | Compiled by: F Warren and Associates Ltd
Project: TS2 | Computerized Breakage | District: 04 - South Island | Cruised by: CONTOUR FOREST CONSULTANTS IN
Version: 2015.00 IFS build 5947

Net Area: Block : (M) - 001:TS2, Plots in Block: 12, TUs: [B RW : 0.1]

		Total	Conifer	Decid	F	C	H	B	Y
Utilization Limits									
Min DBH cm (M)					17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)					30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)					15.0	15.0	15.0	15.0	15.0
Log Len m					10.0	10.0	10.0	10.0	10.0
Volume and Size Data									
Gross Merchantable	m3								
Net Merchantable	m3								
Net Merch - All	m3/ha								
Distribution	%								
Decay	%								
Waste	%								
Waste(billing)	%								
Breakage	%								
Total Cull (DWB)	%								
Stems/Ha (Live & DP)									
Avg DBH (Live & DP)	cm								
Snags/Ha									
Avg Snag DBH	cm								
Gross Merch Vol/Tree	m3								
Net Merch Vol/Tree	m3								
Avg Weight Total Ht	m								
Avg Weight Merch Ht	m								
Avg 10.0 m Log Net	m3								
Avg 10.0 m Log Gross	m3								
Avg # of 10.0 m Logs/Tree									
Net Immature	%								
Net 2nd Growth	%								
Average Slope	%	77							
Algorithm Grades %									
#1 Lum/#1 Prem	D								
#2 Lum/#1 Lum	F								
#2 Sawlog	H								
#3 Sawlog	I								
#4 Sawlog	J								
#4 Shingle	M								
#5 Utility	U								
#6 Utility	X								
#7 Chipper	Y								
Statistical Summary									
Coeff. of Variation	%	112.0	112.0		229.2	346.4	81.8	277.8	346.4
Two Standard Error	%	73.1	73.1		149.7	226.2	53.4	181.4	226.2
Number and Type of Plots		MP = 12							
Number of Potential Trees		65							
Plots/Ha		1.2							
Cruised Trees/Plot		5.5							

Slope % Statistics

Min= 40, Max=113, CV=32.9, Std Error of Mean=7.3, 2SE%=20.9

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***

FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type 1 (M):FdHw (BaCy), Plots in Type: 1, TUs: [A Block : 0.5]

	F	C	H	B	Y	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
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									
Dead P									
Dead U									
Live U									

Average DBH(cm) at 5 Levels

12.5 +	
17.5 +	
22.5 +	
27.5 +	
32.5 +	

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type 2 (M):FdHw(CyCwBa), Plots in Type: 2, TUs: [A Block : 1.7]

	F	C	H	B	Y	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
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									
Dead P									
Dead U									
Live U									

Average DBH(cm) at 5 Levels

12.5 +	
17.5 +	
22.5 +	
27.5 +	
32.5 +	

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [All Treatment Units : 7.8]

	F	C	H	B	Y	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40			0.3			0.3			
45					0.2	0.2			
50			0.4	0.1		0.5			
55			0.8			0.8			
60									
65									
70	0.3		0.8	0.1		1.2			
75			0.1			0.1			
80			0.2			0.2			
85		0.1				0.1			
90	0.4		0.1			0.5			
95			0.1			0.1			
100	0.3					0.3			
105			0.1			0.1			
110	0.3		0.2			0.5			
115			0.3			0.3			
120									
125	0.4					0.4			
130									
135									
140	0.1					0.1			
145									
150									
175									
200									
225									
250									
275									
Total	1.7	0.1	3.5	0.2	0.2	5.8			
Dead P									
Dead U									
Live U									
			Average DBH(cm) at 5 Levels						
12.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
17.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
22.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
27.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
32.5 +	104.7	87.0	74.0	64.2	45.3	83.0			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [A Block : 7.7]

	F	C	H	B	Y	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40			0.3			0.3			
45					0.2	0.2			
50			0.4	0.1		0.5			
55			0.8			0.8			
60									
65									
70	0.3		0.8	0.1		1.2			
75			0.1			0.1			
80			0.2			0.2			
85		0.1				0.1			
90	0.4		0.1			0.5			
95			0.1			0.1			
100	0.3					0.3			
105			0.1			0.1			
110	0.3		0.3			0.5			
115			0.3			0.3			
120									
125	0.4					0.4			
130									
135									
140	0.1					0.1			
145									
150									
175									
200									
225									
250									
275									
Total	1.7	0.1	3.6	0.2	0.2	5.9			
Dead P									
Dead U									
Live U									
			Average DBH(cm) at 5 Levels						
12.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
17.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
22.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
27.5 +	104.7	87.0	74.0	64.2	45.3	83.0			
32.5 +	104.7	87.0	74.0	64.2	45.3	83.0			

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

Type 3 (M):HwFd(BaCyCw), Plots in Type: 9, TUs: [B RW : 0.1]

	F	C	H	B	Y	Total	DP	DU	LU
Utilization Limits									
Min DBH cm (M)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Stump Ht cm (M)	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Top Dia cm (M)	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Log Len m	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
DBH Class									
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
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90									
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100									
105									
110									
115									
120									
125									
130									
135									
140									
145									
150									
175									
200									
225									
250									
275									
Total									
Dead P									
Dead U									
Live U									

Average DBH(cm) at 5 Levels

12.5 +	
17.5 +	
22.5 +	
27.5 +	
32.5 +	

*** 1 tree(s) changed to tree class 6:because only log was less then 3.00 m ***
FLAGS: Leave Tree Report, Normal Cruise, All Trees Compiled, Measure Plots Only, Damage,

File: 11400-25, R18553, Amendment #13

Alberni Valley Community Forest Corporation
7500 Airport Road
Port Alberni, British Columbia
V9Y 8Y9

Dear Sir/Madam:

Reference is made to your application dated February 18, 2016, for an amendment of Road Permit (RP) No. R18553 within Alberni Valley Community Forest Licence K2D.

Pursuant to paragraph 1.01 and 2.01 of RP No. R18553, the roads identified in the list below, and the attached map shall form an integral part of the document for RP No. R18553 and should be attached thereto.

This amendment pertains to the construction, maintenance and use of the following roads within the *Alberni Valley Community Forest Corporation 2011 to 2016 Forest Stewardship Plan approved June 6, 2011:*

Licensee Road Name	**Sec. Designation on Exhibit A Map**	**Station(from)**	**Station(to)**
TA568	**TA568**	**2+209**	**3+099**
TA568G	**TA568G**	**0+000**	**0+063**
TA568H	**TA568H**	**0+000**	**0+099**
TA568J	**TA568J**	**0+000**	**0+888**

All operations are to conform to the *Forest and Range Practices Act*. The Forest Road Engineering Guidebook may be used to assist achieving compliance with the Act.

Yours truly,

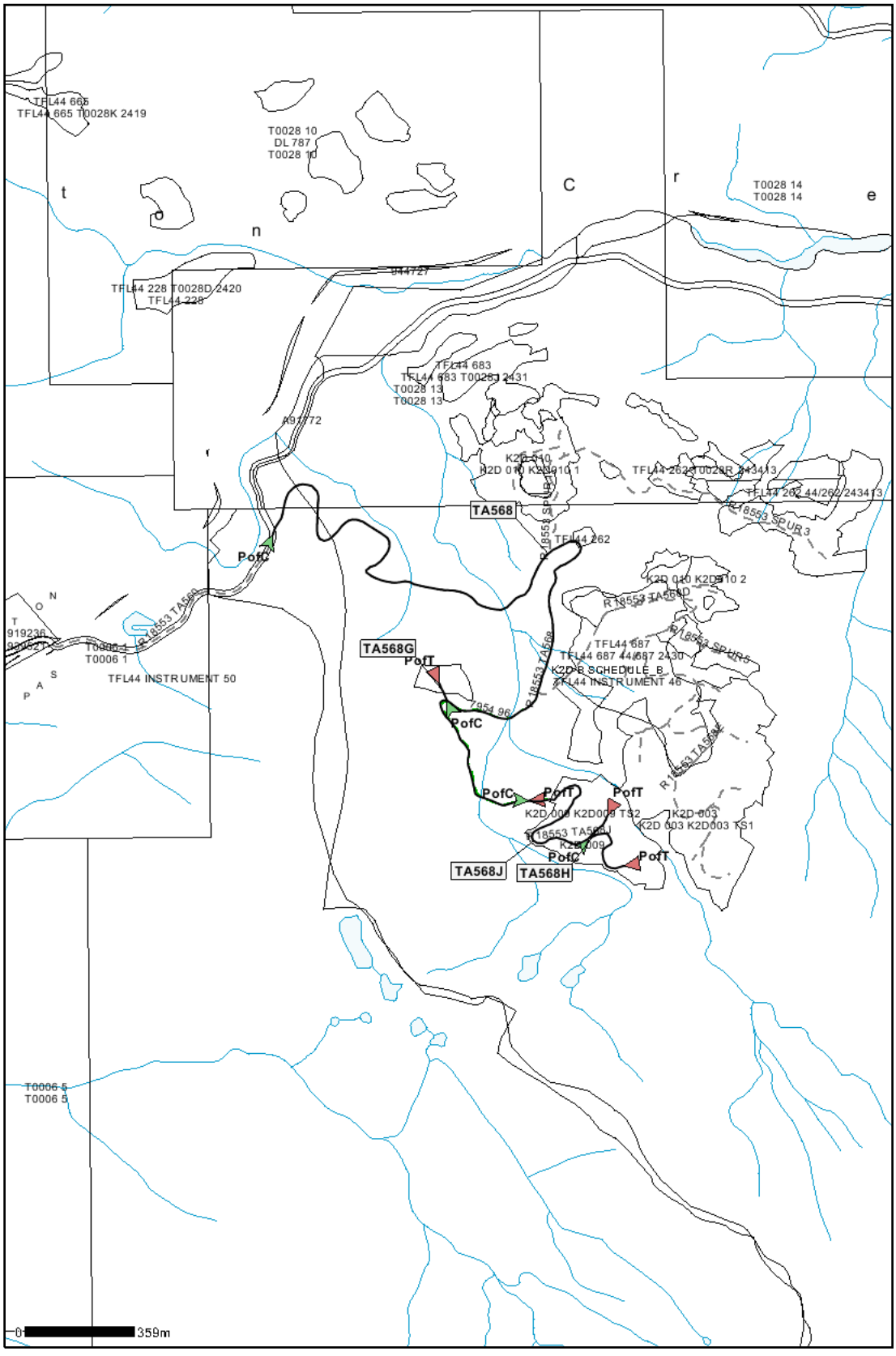
_____

Attachment: Exhibit A Map (ESF 1492993)

Ministry of Forests, Lands and Natural Resource Operations
South Island Natural Resource District
Location:
4885 Cherry Creek Road
Port Alberni BC
Mailing Address:
4885 Cherry Creek Road
Port Alberni BC V9Y 8E9
Tel: (250) 731-3000
Fax: (250) 731-3010

EXHIBIT A

MAP OF : R18553 Amendment # 13 (shown in bold black)			
FOREST REGION : RWC FOREST DISTRICT : DSI	TSA : LAND DISTRICT : CLAYOQUOT DISTRICT	PULPWOOD AGREEMENT :	MGT UNIT TYPE : COMMUNITY FOREST MGT UNIT NO :
ESF SUBMISSION ID : 1492993 BCGS MAPSHEET NO : 92F.024	SCALE : 1:20000 at A Size Length (Km): 4.148	UTM : 10 NAD : NAD83	DRAWN BY : FTA DATE : Feb 19, 2016



Legend

- Tenure Application
- Tenure Road Application
- Retired Tenure Road
- P of C
- P of T
- Tenure Feature
- Range
- TFL
- Provincial Forest
- Forest Service Road
- Highway
- Municipal Road
- Non Status Road
- Recreation Trails
- Road Permit
- SUP Road
- Right of Way
- Schedule B CP Road
- Mineral Tenure Points
- Cities
- Waterbodies
- River/Stream
- Coastline / Island

TA568G (Length: 0.0632 Km, R/W: 75 m)
PofC UTM10 329965, 5460967
PofT UTM10 329942, 5461026
TA568H (Length: 0.0985 Km, R/W: 75 m)
PofC UTM10 330409, 5460500
PofT UTM10 330473, 5460573
TA568 (Length: 3.0988 Km, R/W: 75 m)
PofC UTM10 329419, 5461533
PofT UTM10 330218, 5460630
TA568J (Length: 0.8879 Km, R/W: 75 m)
PofC UTM10 330218, 5460630
PofT UTM10 330519, 5460405

TERRAIN STABILITY FIELD ASSESSMENT
Cutblock TS2

SUMMARY

Cutblock

Apart from the two areas mentioned below, the proposed cutblock has a *Very Low to Low* potential for post-harvest landslides.

Polygon 3 of Unit A has a ***Moderate*** potential for landslides and ***High*** for rockfall. If a slide does occur, it would likely stop in Stream 4.

Polygon 3 of Unit B has a ***Moderate*** potential for landslides and ***High*** for rockfall. If a landslide does occur, it would likely dewater quickly and stop at the built road TA568D.

Road TA568

Renamed TA568J on Feb17,2016

From Stn. 032 to Stn. 130, from Stn. 317 to Stn. 337, and from Stn. 395 to Stn. 420, Full Bench Endhaul will reduce the potential for Fillslope failures to *Low*. Cutslope Angle should be 3:1 in competent bedrock.

Safety Hazards

Polygon 3 of Unit A and Polygons 2 and 3 of Unit B have a ***High*** potential for rockfall from within and upslope of the polygon.

Terrain Risk Associated with Windthrow

If post-harvest windthrow occurs along Streams 3 and 5, it would result in trees sliding into the streams, introducing small to possibly moderate amounts of sediment. A debris flow could occur in Stream 3 and this could travel into the

clearcut downstream of the proposed cutblock. If windthrow occurs along the eastern edge of Unit B, it would likely result in rockfall and could possibly contribute to landslide initiation. Rockfall and landslides could reach TA568D if these events occur along the northern portion of this boundary segment.

INTRODUCTION

Geoforestry Consulting was retained by Meridian Forest Services Ltd. (Meridian) to assess the terrain-related hazards for the proposed Cutblock TS2 in the Taylor River drainage system. I inspected the area on August September 21st, 2015, accompanied by Darin Brown and Donna Underwood, R.P.F. of Meridian. Approximately 5 hours were spent on site. It was sunny and hot.

Information reviewed prior to my field assessment consisted of:

- 1:5,000-scale contour map showing boundary locations.
- Aerial photographs were not available.
- Google Earth 3D Images
- 1:5,000 Terrain Map

The proposed cutblock was ribboned and traversed at the time of the assessment. The cutblock will be harvested conventionally and with helicopter yarding.

Location

The proposed cutblock is located a short distance to the west of the western end of Sproat Lake. It is situated on north-facing slopes overlooking several tributaries to Sutton Creek.

Access to the area is via the TA568 road systems.

General Description of Cutblock

The proposed cutblock consists of three separate units, which for the purposes of this report are designated Units A through C. Unit A is located in the southern

portion of the cutblock and has gullies on either side of the layout. The road TA568 will be extended into Unit A.

Unit B is located a short distance north of Unit A across Stream 3. The ground in this area slopes to the north and west towards TA568D. This area will be harvested from the built road and partially by helicopter yarding.

Unit C is a small area located in the northwestern portion of the development area. A short spur road will be constructed into this area.

Bedrock Geology

Bedrock in the area consists of the Triassic-aged Karmutsen Volcanics. Volcanic bedrock is exposed throughout the development area. The bedrock is regionally faulted and this has produced a strong step-bench topography with the axis of the features oriented to the northwest. Streams 3, 4, and 5 likely flow along bedrock faults.

Steep bedrock bluffs are weathering to produce large amounts of coarse colluvium in Polygon 3 of Unit A and in Polygons 2 and 3 of Unit B.

Surficial Geology

Soils are generally thin throughout the proposed cutblock. They have a silty-rubbly texture and are mainly derived from weathered bedrock. These soils are generally moderately well to well drained.

There are some pockets of sandy-diamictic till exposed along the cutslope ofTA568D. Although there is little evidence of till within the cutblock, there could be pockets. Sand-based till generally weathers to produce moderately well to well drained soils.

Downslope Resources

The proposed cutblock is located within the Sproat Lake Community Watershed. As far as I am aware, there are no fish-bearing streams located within the proposed cutblocks but the streams within are mapped as S4 and Streams 3 and 5 are mapped as S3.

From most areas within the proposed cutblocks, the potential for landslide runout is considered short due to coarse materials and the step-bench topography; benches are locally broad enough to stop landslides.

Longer runout is possible from some of the ground within the northern portion of Unit A, in the eastern portion of Unit B, and the northern portion of Unit C.

Existing Landslides

The surrounding area was inspected for evidence of existing landslides on the air photos, on the drive and flight to the cutblock, and during the ground inspection. Determination of the cause of the landslides outside of the cutblock is important because the conditions present in the initiation zone can be compared to the conditions within the proposed cutblock and/or road alignment. Should similar conditions be found to exist, thorough field observations should be carried out to ensure stability.

I am not aware of any significant open-slope natural or logging-related landslides located within or adjacent to the proposed cutblock. There are slope movement indicators on steep ground located within the proposed cutblock and these areas have a moderate potential for post-harvest landslides.

Rockfall from steep fractured bedrock bluffs exists within and adjacent to some areas of the proposed cutblock.

TERRAIN STABILITY HAZARD RATINGS

A terrain stability hazard rating is the estimated potential for landslide initiation in a given area after road building and/or logging. Determination of a hazard rating is based primarily on the following:

- Hillslope gradient
- Topography
- Surficial material type, texture, and structure
- Derived soils, their texture and drainage
- Bedrock geology of the area
- Vegetation, primarily wet-site indicators
- Evidence of previous landslides or indications of active instability
- Experience in similar terrain with similar geological conditions
- Proposed yarding methods and road location and design

- Potential changes to the natural hillslope drainage pattern
- The effects of root decay

The following are some reference reports that explain in part how I arrive at the hazard ratings presented in this report.

- The report "Terrain Stability Management Strategy for Rennell Sound" by this investigator, May, 2005
- The report "Some Relationships between Bedrock, Shallow Landslides, and Forest Practices", June, 2003, by this investigator
- WFP Terrain Risk Management Strategy, March 2012

A four-class system (Very Low, Low, Moderate, or High) is used to describe the terrain stability hazard rating of a given area or road section. The criteria used for this classification system can be found in the attached Appendix A.

Consequence refers to the anticipated damage caused by a potential landslide. Damage is quantified by first estimating the composition, size, and runout distances of slides. Then the following downslope entities are considered:

- Human safety
- The potential to damage infrastructure such as roads or buildings
- environmentally sensitive receptors such as fish-bearing drainages
- Loss of resource and site degradation

The potential runout distances for slides and their downslope impacts are described in Table 1.

FIELD OBSERVATIONS AND HAZARD MITIGATION OPTIONS

Terrain Hazards Related to Harvesting

The following Table 1 includes observations of the geological conditions and hillslope gradient and topography within an area of the opening. Based on the observations, an area has been assigned a terrain stability hazard rating. I have mapped out areas of homogenous terrain conditions and hazard ratings into polygons, which are shown on the accompanying map of the opening. The

delineation of each polygon is completed in the field and is an approximation, based on tying into falling corners and topographic maps.

For each polygon, should a slide be triggered (even Low hazard polygons can have slides), the downslope impacts of a slide, including anticipated runout distance and interceptors are described.

Terrain Hazards Related to Road Construction

The following Table 2 includes observations of the geological conditions and hillslope gradient and topography along a specified segment of the proposed road alignment. Based on the observations, each specified road segment has been assigned a post-construction hazard rating for conventional construction techniques. Each specified road segment is based on having homogenous terrain conditions and hazard ratings and is delineated in the field.

For road segments that have a higher than Low post-construction failure rating, alternative construction options and the post-construction failure ratings are provided. The hazard ratings provided in this table include the potential instability from road fillslopes and cutslopes and road drainage

Table 1. Geological Observations, Terrain Hazard and Consequences for Polygons in Cutblock TS2

Polygon	General Polygon Description	Geological Conditions	Hillslope Gradient and Topography	Terrain Stability Hazard	Consequence of a Landslide	Remarks
Unit A						
1	Polygon 1 is located along the northern edge of Unit A.	Thin moderately well drained soils derived mainly from weathered bedrock.	45 to 70%.	Low	A landslide would likely be small and travel less than 100 m.	
2	This polygon occupies the majority of Unit A.	Generally thin soils derived from weathered bedrock but with some deeper pockets likely derived from till. Scattered bedrock outcrops with up to over 15 m vertical relief.	Variable topography with some broad gently-sloping benches and other 30 m sections of up to 75%.	Low and Very Low	A landslide would likely be very small to small and stop in this polygon. From some areas in the downslope portion of the polygon long runout of over 100 m is possible.	
3	Polygon 3 is located in the eastern portion of the polygon along Stream 4. This stream flows along what is likely a bedrock fault; the concave feature is larger than could have been eroded by this stream.	Thin colluvium and fractured bedrock outcrops to over 8 m high.	Generally steep at over 70% and up to over 80%.	**Moderate**	A landslide would likely be small and would probably stop at the toe of the slope within Stream 4. A slide event might be able to travel down Stream 4 to Stream 3 but would have to travel parallel to the stream to have enough momentum once it hits the stream to travel down it.	

Polygon	General Polygon Description	Geological Conditions	Hillslope Gradient and Topography	Terrain Stability Hazard	Consequence of a Landslide	Remarks
4	This polygon is located along the eastern edge of Unit A. The ground in this polygon slopes towards Polygons 2 and 3.	Moderately well drained soils derived from weathered bedrock and colluvium. Soils are wetter around FC25 to FC26.	45 to 70% near FC25. A snow avalanche may have impacted this area. There is a rock bluff estimated to be 40 to 50 m high just south of FC25 to FC26. Some benched ground between FC26 and FC30.	Low	A landslide would likely be small and would probably stop in Polygon 2.	
Unit B						
1	Polygon 1 is located in the southwestern portion of Unit B.	Generally thin folisols and scattered bedrock outcrops. Some coarse colluvium along upslope edge.	Generally 15 to 45% with some short steeper sections on the downslope edge.	Low and Very Low	A landslide would likely be very small or smaller and would stop in this polygon. If a slide goes out of this polygon, it would likely reach the built road below.	
2	This polygon is located in the southeastern portion of Unit B. The ground in this polygon slopes towards Polygon 1.	Abundant coarse colluvium. Steep bedrock bluffs just upslope of the falling boundary.	65 to 75%	Low for Landslides, **High for rockfall.**	A landslide would likely be very small and would stop in this polygon or in Polygon 1.	Workers should be made aware of the hazard for rockfall from within and upslope of this polygon.
3	Polygon 3 is located in the northern portion of Unit B. The ground in this polygon slopes towards the built road TA568D.	Abundant bedrock as well as colluvium and fine soil pockets. Actively raveling and rockfall from within most of the polygon.	70 to over 85% with irregular topography.	**Moderate**	A landslide would likely be small to moderate in size and would likely dewater quickly and stop at TA568D.	

Polygon	General Polygon Description	Geological Conditions	Hillslope Gradient and Topography	Terrain Stability Hazard	Consequence of a Landslide	Remarks
Unit C						
1	Polygon 1 occupies the majority of Unit C.	Moderately well drained soils derived from weathered bedrock and some colluvium. Bedrock outcrops around this polygon.	Generally about 45 to 70% with 15 m of 70 to 85%.	Low	A landslide would likely be small but could travel over 100 m downslope, possibly to the built road.	
2	This small polygon is located in the upslope or southern portion of Unit C.	Thin folisols.	Less than 25%.	Very Low	N/a.	

Table 2. Hazard Rating and Consequences for Construction Options – TA568 & Spurs

Road Section	Hillslope Gradient and Topography	Geological Conditions	Construction Options	Post Construction Landslide Hazard Cutslope/ Fillslope	Road Drainage Hazard	Consequence of a Slide	Remarks
TA568							
Stn. 000 – Stn. 032	The alignment cuts up onto the cutslope of the built road.	Shallow colluvium.	Conventional	Low/ Low	Low	A landslide would be very small or smaller and stop on the built road.	

Road Section	Hillslope Gradient and Topography	Geological Conditions	Construction Options	Post Construction Landslide Hazard Cutslope/ Fillslope	Road Drainage Hazard	Consequence of a Slide	Remarks
Stn. 032 – Stn. 130	+65 to 80%, -55 to 70%. Stream 4B flows in a concave feature at about 15 to 20 m wide by 3 m deep.	Thin soils and bedrock. Many wet-site plants.	Conventional	Low/ **Moderate**	Low	A landslide would likely be small and would probably travel less than 50 m due to close proximity to benches (below centerline).	
			Full Bench Endhaul. Cutslope Angle 3:1 in Competent Bedrock.	Low/ Low	Low	Little material available to slide	This option reduces the potential for Fillslope failures to Low.
Stn. 130 – Stn. 300	Generally in the range of +/-45 to 55%. Some steeper sections on bedrock outcrops.	Generally thin soils and bedrock outcrops.	Conventional	Low/ Low	Low	A landslide would likely be very small and would probably stop within about 15 m on small benches. If it travels past the benches, it could travel about 50 to 75 m to the lower road.	

Road Section	Hillslope Gradient and Topography	Geological Conditions	Construction Options	Post Construction Landslide Hazard Cutslope/ Fillslope	Road Drainage Hazard	Consequence of a Slide	Remarks
Stn. 300 – Stn. 317	-40% for 2 m and -15 to 25% for 10 m. 4 m high bedrock outcrop just upslope of centerline.	Thin soils and bedrock outcrops.	Conventional	Low/ Low	Low	A landslide would likely be very small but could potentially travel over 100 m downslope if it travels past the small bench.	
Stn. 317 – Stn. 337	The alignment cuts up through bedrock that is approximately 4 m high.	Mainly bedrock.	Conventional	Low/ **Moderate**	Low	A landslide could be small to moderate in size and could travel over 100 m downslope.	
			Full Bench Endhaul. Cutslope Angle 3:1 in Competent Bedrock.	Low/ Low	Low	Little material available to slide	This option reduces the potential for Fillslope failures to Low.
Stn. 337 – Stn. 395	The alignment crosses irregular rocky ground. Locally the downslope gradient is up to 60% for about 6 m but there is 15 m of less than 30% ground downslope of that.	Thin soils and bedrock outcrops. One bedrock outcrop is 8 to 10 m high and located just upslope of centerline.	Conventional	Low/ Low	Low	A landslide could be small to moderate in size and could travel over 100 m downslope if it travels past the bench located just below centerline.	

Road Section	Hillslope Gradient and Topography	Geological Conditions	Construction Options	Post Construction Landslide Hazard Cutslope/ Fillslope	Road Drainage Hazard	Consequence of a Slide	Remarks
Stn. 395 – Stn. 420	Up to -60% for 6 to 8 m with steep ground downslope of that.	Thin soils and bedrock.	Conventional	Low/ **Moderate**	Low	A landslide could be small to moderate in size and could travel over 100 m downslope.	
			Full Bench Endhaul. Cutslope Angle 3:1 in Competent Bedrock.	Low/ Low	Low	Little material available to slide	This option reduces the potential for Fillslope failures to Low.
Stn. 420 – Stn. 587	Generally less than 25%.	Thin folisols.	Conventional	Very Low/ Very Low	Low	N/a.	
Stn. 587 – Stn. 640	The alignment is located near the toe of steeper ground. +55 to 75% for up to 30 m. -40 to 50 for less than 5 m with a 15 m gently-sloping bench below that.	Moderately well to well drained thin soils.	Conventional	Low/ Low	Low	A landslide would likely be very small and travel less than 20 m.	
Stn. 640 – Stn. 712	Generally +/-40 to 50%. Some small benches of less than 25%.	Moderately well to well drained thin soils.	Conventional	Low/ Low	Low	A landslide would likely be small initially but could potentially travel several hundred meters downslope.	

Road Section	Hillslope Gradient and Topography	Geological Conditions	Construction Options	Post Construction Landslide Hazard Cutslope/ Fillslope	Road Drainage Hazard	Consequence of a Slide	Remarks
Stn. 712 – Stn. 750	The alignment is located on the outer sidewall of the Stream 4 system. The ground is less than 60% but will require a steep road grade.	Moderately well to well drained silty-rubbly soils derived mainly from weathered bedrock.	Conventional	Low/ Low	Low	A landslide would likely be small and travel less than 50 m.	
Stn. 750 – Stn. 852	15 to 50%. 2 to 3 m drop below centerline between Stn. 810 and Stn. 820. Gently-sloping below that.	Moderately well to well drained soils derived mainly from weathered bedrock.	Conventional	Low and Very Low for both Cutslope and Fillslope.	Low	A landslide could potentially travel well over 100 m downslope.	
Stn. 852 – Stn. 888	Less than 25%.	Moderately well drained thin silty-rubbly soils derived mainly from weathered bedrock.	Conventional	Very Low/ Very Low	Low	N/a.	
TA568E							
Stn. 000 – Stn. 050	Generally +/-40 to 50%.	Moderately well drained thin soils.	Conventional	Low/ Low	Low	A landslide would likely be small initially but could potentially travel over 100 m downslope.	
Stn. 050 – Stn. 099	Less than 25%.	Moderately well drained thin soils derived mainly from weathered bedrock.	Conventional	Very Low/ Very Low	Low	N/a.	
TA568F							
Stn. 000 – Stn. 063	Generally less than 25%.	Moderately well to well drained thin folisols.	Conventional	Very Low/ Very Low	Low	N/a.	

GULLIES, GULLY-LIKE FEATURES, and FANS

This section lists and describes significant gullies, gully-like terrain, and fans within and adjacent to the proposed cutblock. The purpose of this section is to alert foresters and managers to these features in order to facilitate management of windthrow and sediment.

The three streams described below are likely all flowing along bedrock faults. Therefore the depth of the features is not represented just by erosion.

Stream 3

Near FC27 the stream flows in a gully that is estimated at over 100 m wide. The eastern sidewall is about 75 to 100 m high and contains abundant bedrock and it is very steep. The western sidewall is about 20 m high and very steep. The active channel is over 5 m wide and it is transporting material to boulder size.

Near FC17 the gully is about 25 m wide by 6 to 15 m deep with steep rocky sidewalls. The active channel is about 6 to 8 m wide and it is transporting material to boulder size over a stepped gradient. The channel substrate comprises mainly bedrock.

Stream 4

Near FC31 the stream flows in a gully-like feature that is about 15 to 20 m wide by 8 to 10 m deep with steep rocky sidewalls. The bedrock along the stream is oxidized. The active channel is about 1.25 m wide.

Stream 5

Near FC21 the stream flows in a gully that is about 30 m wide. The northern sidewall is about 7 to 10 m high; the southern sidewall about 15 to 20 m high. The sidewalls and substrate comprise mainly bedrock. The active channel is over 5 m wide and it is transporting material to boulder size. A short distance upstream the feature is about 10 to 20 m wide by 3 to 8 m deep – it does vary in size and depth upstream.

Near FC24 the feature is about 30 m wide with a 4 to 5 m northern sidewall and 15 m high southern sidewall.

TERRAIN RISK ASSOCIATED WITH WINDTHROW

This section deals with the anticipated terrain hazard and consequence should windthrow occur along an edge of the cutblock following harvesting. This section is not a windthrow hazard assessment; it is intended to be used by the silvicultural prescription writer, layout engineers, and managers as a guide for possible edge treatments such as topping or pruning. Only those edges that I consider to have significant terrain risk associated with windthrow are included below. If the layout crew determines that the hazard of windthrow is low, then treatment of the edge would likely not be required.

Segment 1; Stream 3

This stream is described above in the Gullies section of the report. If post-harvest windthrow occurs along this stream, trees would slide into the stream, introducing small to possibly moderate amounts of sediment. A debris flow could occur and could travel into the existing clearcut downslope of the proposed cutblock.

Segment 2: Stream 5

This stream is described above in the Gullies section of the report. If post-harvest windthrow occurs along this stream, trees would slide into the stream, introducing small to possibly moderate amounts of sediment. A debris flow is unlikely to occur.

Segment 3: Steep Rocky Ground Eastern Edge Unit B

The falling boundary is located against steep fractured rocky ground. If post-harvest windthrow occurs along this edge, it would likely result in rockfall and could possibly contribute to landslide initiation. Rockfall and landslides could reach TA568D if these events occur along the northern portion of this boundary segment.

CONCLUSIONS

The proposed cutblock is mostly located on stable ground but there are some steep and potentially unstable areas due in part to regional bedrock faulting. Polygon 3 of Unit A has a moderate potential for landslides and high for rockfall. If a slide does occur, it would likely stop in Stream 4. Polygon 3 of Unit B has a moderate potential for landslides and high for rockfall. If a landslide does occur, it would likely dewater quickly and stop at the built road TA568D.

For road TA568, from Stn. 032 to Stn. 130, from Stn. 317 to Stn. 337, and from Stn. 395 to Stn. 420, Full Bench Endhaul will reduce the potential for Fillslope failures to *Low*. Cutslope Angle should be 3:1 in competent bedrock.

Polygon 3 of Unit A and Polygons 2 and 3 of Unit B have a high potential for rockfall from within and upslope of the polygon.

If post-harvest windthrow occurs along Streams 3 and 5, it would result in trees sliding into the streams, introducing small to possibly moderate amounts of sediment. A debris flow could occur in Stream 3 and this could travel into the clearcut downstream of the proposed cutblock. If windthrow occurs along the eastern edge of Unit B, it would likely result in rockfall and could possibly contribute to landslide initiation. Rockfall and landslides could reach TA568D if these events occur along the northern portion of this boundary segment.

LIMIT OF LIABILITY

This report provides an assessment of the potential for terrain instability following timber harvesting in accordance with the harvesting plans disclosed to Geoforestry Consulting.

The evaluation of the hazards contained within this report is based upon limited visual inspection of surface expression, road cuts, slope failures, gullies, and/or shallow soil pits in the proposed harvesting area along with our experience in similar terrain. It represents our professional opinion of the hazards in the area assessed. However, it is not intended to be a guarantee or warranty of the actual conditions or hazards existing in the area. No other surface or subsurface investigation was performed. Accordingly, assessment of the potential for deep-seated bedrock failures is beyond the scope of this report.

Predicting the location or distribution of underground water conduits, zones of soft bedrock, or developing failure plains is beyond the scope of this assessment if they are not expressed on the ground surface in terms of plant growth, surface water flow, or topographic features (draws, bowls, or channels). It is possible during heavy rainfall events that springs will develop in areas where there is no surface expression of existing springs. If a spring develops during a heavy rainstorm, it could trigger a landslide depending upon its location.

Geological conditions other than those indicated in this report may exist in the area assessed. If such conditions are observed, Geoforestry Consulting should be immediately contacted so that this report may be reviewed and amended accordingly.

This report pertains to the circumstances and conditions which apply to the specific harvesting plans disclosed and it can not be reasonably used for any purpose except in order to complete the specific harvesting plans disclosed and by government agencies regulating these specific harvesting activities. It is not reasonable for any third party to rely upon this or any of the observations, opinions or conclusions contained herein and any reliance on or decisions made by third parties based upon this report remains the responsibility of such third parties. Geoforestry Consulting accepts no responsibility for damages, if any, suffered by any third party as a result of any reliance upon this report.

Prepared by:

Jack Whittles, M.Sc., P.Geo.

APPENDIX A

(From Western Forest Products Terrain Risk Management Strategy 2012)

Table 1: Terrain Hazard Definitions

HIGH	>5 failures per 100 ha logged on steep terrain.
MODERATE	3-5 failures per 100 ha logged on steep terrain.
LOW	1-<3 failures per 100 ha logged on steep terrain.
VERY LOW	<1 failure per 100 ha logged on steep terrain.

- Failure = 0.05 ha event (smallest inventoried and smallest visible on airphotos)
- Steep terrain = Class IV/V; Es1/Es2; P/U; >60%
- Terrain to be evaluated with a 1 in 15 year storm event in mind (100 mm in 24 hrs)

Table 2: Landslide Size

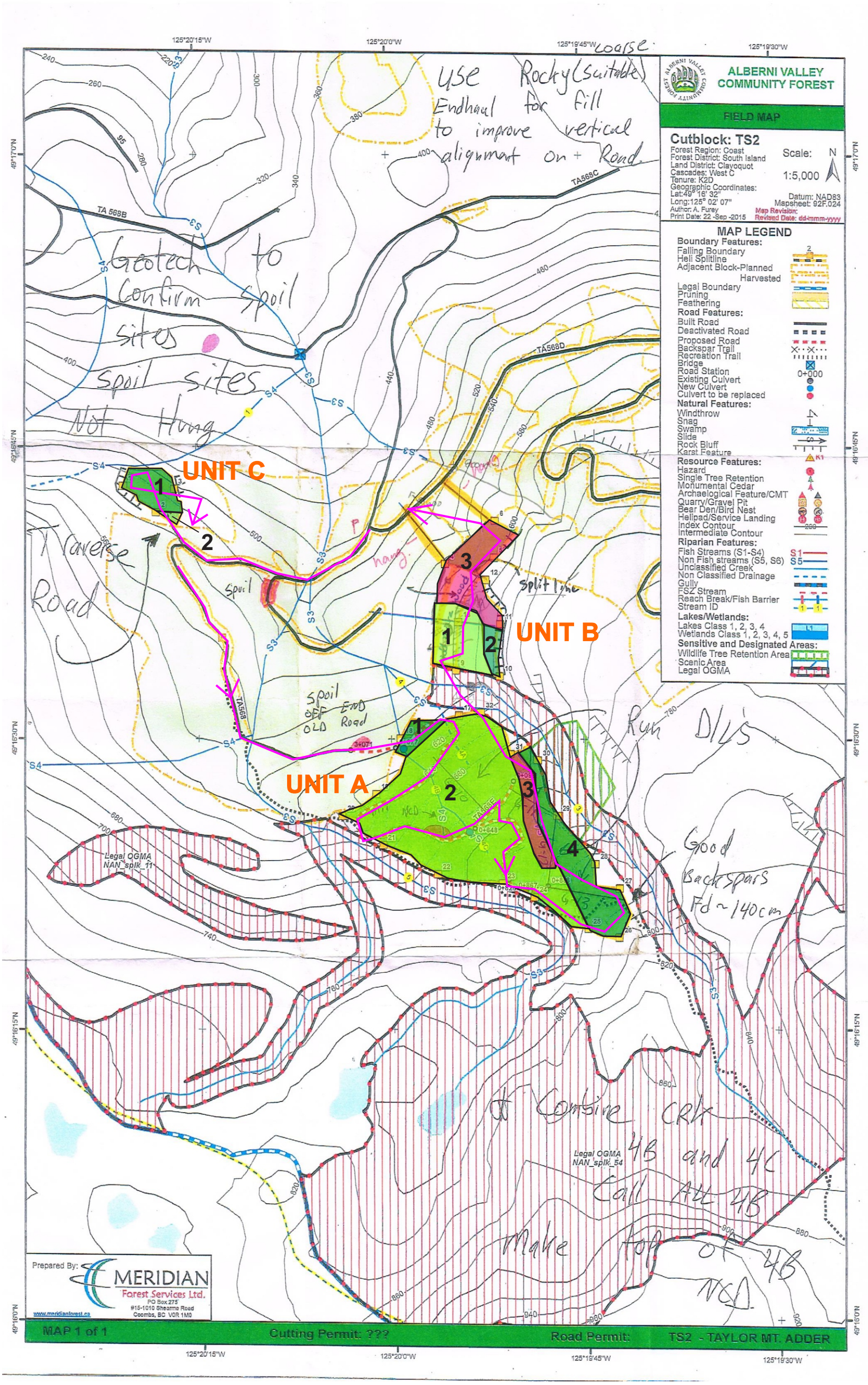
1	0.05 – 0.1 ha	Very Small
2	<0.1 – 0.25 ha	Small
3	<0.25 – 0.5 ha	Medium
4	<0.5 – 1 ha	Large
5	>1 ha	Very Large

Table 3: Consequence Definitions

HIGH	• Landslide would directly enter fish stream, fish lake, or marine waters, or water intake for domestic consumption, or jeopardizes lives of the public, or impact major public infrastructure, or other property owner. • Landslide would enter nonfish stream within 500 m of fish bearing waters.
MODERATE	• Landslide would enter nonfish stream more than 500 m from fish bearing waters, OR there is a runout slope of <20% for <100 m below landslide to fish bearing waters or intake to a public area, or other property owner.
LOW	• There is a runout slope of <20% for >200 m below landslide. Some suspended sediment and small woody debris may reach fish habitat/intake, or public area, or other property owner.
VERY LOW	• There is a runout slope of <20% for >200 m below landslide. Slide material is unlikely to reach stream/intake at time of event or transport to stream. A landslide would not be a public or safety concern; would not impact any infrastructure or other property owner.

Terrain Hazard Assessment- Cutblock TS2

TRAVERSE ROUTE →



FINAL