



Harrop-Procter Community Co-operative

SITE PLAN CP143 Block 10

A. TENURE IDENTIFICATION

LICENSE	C.P.	BLOCK	LOCATION	UTM
K1B	143	10	5.5 km East Harrop Mainline Section C4 (Low Road)	496250E 5491250N

B. AREA UNDER THE PLAN

Gross Area	PAS	NP	WTRA	Other Reserves	Other (specify)	NAR
7.7	0.4	-	2.4	-	-	4.9

C. SOIL DISTURBANCE

SU	Max Allowable Soil Disturbance (%)	Max Amount TAS May Exceed MASD Prior to Rehab (%)	Max Allowable Soil Disturbance for Roadside Work Areas (%)	Maximum Permanent Access Structures (%)
1	10	5	25	7.0
SU	CRITICAL SITE CONDITIONS THAT AFFECT TIMING OF OPERATIONS			
1	No skidding/ yarding operations when soils are saturated or during heavy hillslope runoff.			

D. RESULTS AND/OR STRATEGIES

This Site Plan is consistent with HPCC's approved Forest Stewardship Plan and the Forest and Range Practices Act and Regulations (FRPA S.10(2)(b)).

Value/ Objective	FSP Section	Reference	How the result or strategy applies to the site
Soils	4.1	FPPR S.35 Soil disturbance	Maximum allowable soil disturbance is 10%.
		FPPR S.36 PAS	PAS will not exceed 7%.
Timber	4.2	FPPR S. 12(8)	N/A
Wildlife	4.3	Species at Risk strategy	No observations of species at risk during block planning and design.
		GAR #U-4-012 Mountain Caribou	N/A. The block is outside of the area covered by this GAR Order.
Riparian	4.4	Riparian Management Areas—	N/A. There are no streams in the block. There is an NCD which is

Areas		RRZ and RMZ	protected in a WTRA.
Fish Habitat	4.5	FPPR S.8.1	N/A. The block is not in a Fisheries Sensitive Watershed.
Water	4.6.1	Community Watersheds	N/A. The block is not in a Community Watershed.
	4.6.2	Domestic Watersheds	<p>This block is in the Harrop Creek domestic watershed. A detailed Harrop Creek watershed assessment was completed in 2006, and a watershed update was completed in July 2010. Harvesting in this block will be consistent with the recommendations of the watershed assessment.</p> <p>POD's have been mapped. Water agreement holders were sent notification/ consultation letters on June 30, 2010 and were invited to provide comments on this block.</p> <p>No timber harvesting will occur within a 100 m radius upslope of a licensed waterworks.</p>
Biodiversity	4.7	HLPO RMZO 1: Biodiversity Emphasis	Harrop Creek is in Landscape Unit K-9. KBLUP-IS assigned Landscape Unit K-9 a 'Low' biodiversity emphasis.
		HLPO RMZO 2: Old and Mature Forest	This block is in the ICHdw1 (NDT 3). This block is not in a proposed OGMA and does not include any 'Old' forests. Old forest requirements will be managed through OGMA's. 'Mature' forest targets are easily met in K-9.
		HLPO RMZO 4: Green-up	Green-up height is 3.0 m in this block, which is in a Scenic Area.
		FPPR S.64 Maximum cutblock size	Cut block size is <40 ha.
		FPPR S.65 Adjacency	The combined area of this cutblock and non-greened-up portions of adjacent cutblocks does not exceed 40ha.
		Wildlife tree retention strategy	WTRA's account for 32% of the gross block area.
Visual Quality	4.8	Visual quality objectives	This block is in a Scenic Area with a Retention VQO. A Visual Impact Assessment has been completed. The VIA indicates that the VQO will be met.
Cultural Heritage Resources	4.9	CHR strategy	<p>Archaeological Overview Assessments indicate that this area has 'low' archaeological potential.</p> <p>Referral letters were sent out to the appropriate First Nations on June 30, 2010.</p>
Recreation	4.10	Recreation trails and sites	No recreation trails or sites in the block. Mill Lake Trail is adjacent to the upper boundary of the WTRA and will not be impacted by logging operations.

E. STOCKING REQUIREMENTS

SU	NAR	STANDARDS ID #	OTHER STOCKING REQUIREMENTS
1	4.9	18059	N/A
Comments		-	

F. ADDITIONAL COMMENTS

-

G. ADMINISTRATION

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DATE SIGNED	
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 standards acceptable of a Registered Professional Forester.	

The attached map forms an integral part of this site plan.

SITE PLAN SUPPORT DOCUMENT

LICENSE	C.P.	BLOCK	LOCATION	UTM
K1B	143	10	5.5 km East Harrop Mainline Section C4 (Low Road)	496250E 5491250N

1 SITE DESCRIPTION OVERVIEW

BEC	Elevation (m)	Aspect	Slope (%)	Terrain and Soils
ICHdw1-01a	1030 – 1200	West	40 – 45	zsdMvb – V, well-drained sandy loam over loamy sand
Species composition		Special site features		Other site factors
Fd40 Cw20 Pl20 Lw10 Hw10		-		-

2 ASSESSMENTS

TERRAIN STABILITY FIELD ASSESSMENTS (TSFA's)—including gentle over steep assessments

DATE	CONSULTANT	RECOMMENDATIONS
July 2010	Perdue Geotechnical Services	<p>General Timber Harvesting Recommendations (CP143 Blocks 9,10,11):</p> <ol style="list-style-type: none"> Ground skidding across natural drainage paths should be avoided where practical. If this cannot be avoided, harvesting should be conducted during the drier months of the year, or effort made to ensure timber is skidded butt-first to minimize potential ground disturbance within such drainage features. Spring snow melt and prolonged or heavy periods of rainfall would constitute excessively wet site conditions. A post-harvest inspection should be completed to remove logging debris from the wetted perimeter of all watercourses and subtle drainage features to ensure an accumulation of coarse woody debris does not result in a drainage diversion. All temporary skid trails may be built using debris-supported fill slopes to reduce cut bank excavation and the potential for groundwater interception. Drainage control measures should be implemented to ensure all natural drainage paths are maintained. All trails should be rehabilitated upon completion of the proposed timber harvesting. If harvesting is to be conducted during winter months, trails should be seasonally deactivated prior to the spring freshet by outslowing where practical and installing cross ditches to maintain natural drainage patterns.
COMMENTS	<p>Perdue recommendations will be followed.</p> <p>Perdue: "No evidence of instability was observed throughout the proposed harvest area or the immediate surrounding slopes during the field review."</p> <p>The projected ECA over sensitive slopes "is not expected to have a significant adverse hydrological effect".</p> <p>"Likelihood of landslide initiation following the proposed harvesting of Block 10 is rated as Low."</p>	

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HYDROLOGICAL/ WATERSHED ASSESSMENTS		
DATE	CONSULTANT	RECOMMENDATIONS
March 2006	Aqua Environmental Associates	<p>Relevant recommendations:</p> <p>3) In gullied terrain, encourage channel and gully stability by establishing windfirm reserves for the entire area within the inner gorge of gullies showing signs of moisture (presence of stream or relevant plant indicators). Where 'dry' gullies (no stream and no relevant plant indicators) at least 2 metres in depth connect with these 'wet' gullies, extend the reserve to include the area within the inner gorge of the connected dry gully.</p> <p>4(a) Where development is planned upslope of Class IV or V terrain:</p> <ul style="list-style-type: none"> • Avoid altering drainage patterns onto these slopes • In the absence of following the recommendations of a professional site-specific assessment, limit the ECA over sensitive sites (Class IV or V terrain) to 20% • Ensure that Detailed Terrain Stability Assessments include explicit consideration and field review of all potential downslope changes in groundwater loading which might affect slope stability. <p>(c) Use of partial cuts (single-tree selection, group selection, etc.) can be helpful in reducing the potential for changes in hillslope hydrology..</p> <p>5) (a) Use cable harvesting techniques on all Class IV terrain.</p> <p>(b) Do not harvest on Class V terrain.</p> <p>7) If the risk-reduction strategies and recommendations in this report are followed and the total drainage road density does not exceed 1.0km/km², the following guidelines may be used as a planning tool in your risk-management planning:</p> <ul style="list-style-type: none"> • To maintain a very low risk of your activities to the flow regime and to the stability of the alluvial fan, maintain weighted ECA at or below 15% and limit harvest rates to a maximum of 5% incremental ECA in five years and 10% in ten years (etc.) <p>15) Once the initial layout and site plans are prepared for the Harrop Face and areas downslope of the Harrop Mainline, retain the services of an appropriate qualified professional to review your plans in light of the downslope water resource values.</p>
July 2010	Aqua Environmental Associates	<p>Watershed assessment report card update for the Harrop Creek Watershed</p> <p>Weighted ECA of the Harrop Creek drainage is currently 9.1%. Proposed CP143 logging and road building would increase the weighted ECA to 10.1%. ECA would "in general terms, be considered to be at low levels hydrologically".</p>

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COMMENTS	<p>Rec. 3: All gullies in Block 9 are dry gullies, with the exception of the gully containing the mapped NCD. The inner gorge of this gully is entirely within WTP1.</p> <p>Recs. 4(a), 4(c), and 15: Block 10 is upslope of Class V terrain above Harrop Creek. As per Aqua recommendations 4(a) and 15, following initial block layout and site plan development, Perdue Geotechnical Services completed a terrain stability field assessment for this block (July 2010). The assessment explicitly considered potential downslope changes to groundwater loading that might affect slope stability, based on HPCC's planned 'seed tree' harvest Block 10. Perdue concluded that the projected ECA over sensitive slopes "is not expected to have a significant adverse hydrological effect". Perdue indicated a 'Low' likelihood of landslide initiation following proposed Block 10 logging. See TSFA recommendations and comments above.</p> <p>Rec. 5: The upper portion of this block is in mapped Class IV terrain. Much of this area is in WTP1, including all of the moist gully containing the NCD. The remaining TC IV area is on dry, well-drained 40-45% slopes. Mass wasting hazard in this area was classified at 'Low' to 'Moderate' in the SP plot sampling. All trails to be fully rehabilitated upon completion of harvesting. As a result, ground-based harvesting is not expected to impact terrain stability in this area.</p> <p>Rec. 7: As per Aqua (July 2010), the total road density will be 0.13 km/km² and the weighted ECA will be 10.1%. Incremental ECA from 2005 to 2010 will be 2.3%.</p>
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RIPARIAN ASSESSMENTS

SU	Riparian I.D. and Class.	RMZ Width (m)	RRZ Width (m)	BA or SPH Retained	Comments (Indicate if in a community watershed)
-	-	-	-	-	-
COMMENTS	Not applicable (no streams in this block). An NCD is located in WTP1. An S6 stream is located a minimum of 30 meters south of the block boundary.				

SOIL ASSESSMENTS

		HAZARD RATINGS		SOIL CHARACTERISTICS			
SU	Soil Comp	Surface Erosion	Soil Disp	Depth To Unfavourable Subsoil		Type of Unfavourable Subsoil	Sediment Delivery Risk (Community Watersheds)
				Min(cm)	Max(cm)		
1	M	H	M – H	-	> 90	bedrock	-
COMMENTS	See Silviculture Prescription Plot Cards.						

VISUAL IMPACT ASSESSMENTS

RESULTS	Visual Impact Assessment (July 2, 2010) indicates that Block 10 is not visible from either viewpoint. VIA indicates that the Retention Visual Quality Objective will continue to be met.
COMMENTS	-

PEST INCIDENCE SURVEY INFORMATION

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Pest Specific Comments
Pine beetle has killed most lodgepole pine. No observations of Douglas-fir beetle, or any other significant pests.
Forest Health Comments
Dead pine will be salvaged. Low levels of Armillaria root rot.

ARCHAEOLOGICAL IMPACT ASSESSMENTS		
DATE	CONSULTANT	RECOMMENDATIONS
-	-	-
COMMENTS	AOA mapping (Choquette 2002, and Kutenai West Heritage Consulting 2001) indicates that there is Low archaeological potential in this area, and no archaeological impact assessments are required.	

2 RESERVES/ WILDLIFE TREE RETENTION

Wildlife Tree Patches (inside or attributed to the block)		
I.D.#	# ha	Ecosystem and timber type
WTP1	2.45	ICHdw1-01a; semi-open, multi-layered stand with mature FdLw, scatted FdLw vets, dead PI, advanced FdCw(HwPw) regeneration and patchy shrub layer.
COMMENTS	In addition to WTP1, there will be 4 m2/ha retention of seed trees/ wildlife trees within the NAR (approx. 10% retention of dominant/co-dominant layer 1 trees).	

3 FSP CONSIDERATIONS / RATIONALES

Value/ Objective	FSP Section	Reference	Consideration/ Rationale
Soils	4.1	FPPR S.35 Soil disturbance	10% limit. No 'sensitive soils' per FPPR S.35
		FPPR S.36 PAS	PAS will be approximately 4.7% of gross block area.
Timber	4.2	FPPR S. 12(8)	N/A
Wildlife	4.3	Species at Risk strategy	No observations of species at risk during block planning and design.
Riparian Areas	4.4	Riparian Management Areas— RRZ and RMZ	N/A. There are no streams in the block.
Fish Habitat	4.5	FPPR S.8.1	N/A. The block is not in a Fisheries Sensitive Watershed.
Water	4.6.1	Community Watersheds	N/A. The block is not in a Community Watershed.
	4.6.2	Domestic Watersheds	See HYDROLOGICAL/ WATERSHED ASSESSMENTS section above. Block is more than 1.5 km from nearest POD.

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Biodiversity	4.7	HLPO RMZO 2: Old and Mature Forest	Stand age is approximately 100 years, with a few scattered vets.
		FPPR S.64 Maximum cutblock size	Gross area of block is 7.7 ha, NAR is 4.9 ha.
		FPPR S.65 Adjacency	CP138-6 SU2 (seed tree/ shelterwood cut, partially not stocked/ greened up) is a minimum of 150 meters upslope of the harvest area of this block. WTP1 is located between these two areas. Note that CP138-6 TUB and CP138-4 SU2 have residual basal areas ~ 18m ² /ha (>= 40% basal area retention) and have no regeneration objectives, and thus are considered stocked/ greened-up for the purposes of Adjacency calculations.
		Wildlife tree retention strategy (WTRA's)	WTP1 accounts for 32% of the gross block area. CP143 WTRA's account for 12.8% of the combined areas of CP143 Blocks 9, 10, and 11. FSP minimum commitments of 3.5% WTRA per cutblock and 7% WTRA per cutting permit are exceeded.
Visual Quality	4.8	Visual quality objectives	See VIA comments above.
Cultural Heritage Resources	4.9	CHR strategy	Archaeological Overview Assessments indicate that this area has 'low' archaeological potential. Referral letters were sent out to the appropriate First Nations on June 30, 2010.
Recreation	4.10	Recreation trails and sites	Mill Lake Trail is adjacent to the upper boundary of the WTRA and will not be impacted by logging operations.

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HARVEST PLAN

LICENSE	C.P.	BLOCK	LOCATION	UTM
K1B	143	10	5.5 km East Harrop Mainline Section C4 (Low Road)	496250E 5491250N

1 STAND DESCRIPTION

SU	STRATUM/ TU	SPECIES COMPOSITION (OVERSTORY)	AVERAGE BASAL AREA	NOTES
1	-	Fd40 Cw20 PI20 Lw10 Hw10	45	Fd and Cw generally healthy, 80 – 100 years old. PI mostly grey attack.

2 SILVICULTURAL/ HARVEST SYSTEMS

SU	STRATUM/ TU	HARVEST SYSTEM	SILVICULTURE SYSTEM / VARIANT	RESERVE TYPE
1	-	Ground	Seed tree	Wildlife tree patches and 4m ² /ha retention in NAR.

3 LEAVE TREE SPECIES AND FUNCTIONS

SU	Species		Minimum Leave Tree Characteristics Including Form, Health And Vigour
	Pref.	Accept	
1	Fd, Lw, Py, Cw, Pw	Hw	Residual basal area 4 m ² /ha (range 3 – 6 m ² /ha). Residual trees to include vets, dominant and co-dominant trees >22.5cm dbh with >30% live crown.
COMMENTS		Retain approximately 30 trees per hectare (based on average 40 cm dbh). Preferred leave trees will have deep crowns and low height: diameter ratios (preferred <90). Retention to be generally well dispersed through the NAR, with small linear clumps of retention (<0.1 ha) in deeper gullies, especially the gully shown on the Block 10 Site Plan map, and any gullies connected to this gully.	

4 SOIL DISTURBANCE AND REHABILITATION

SU	Sensitive Soils (Y/N)	Max. Allowable Soil Disturbance (%)	Max. Amount TAS May Exceed MASD Prior To Rehab (%)	Max. Allowable Soil Disturbance for Roadside Work Areas (%)	Permanent Access Structures (%)
1	N	10	5	25	0%
SU	CRITICAL SITE CONDITIONS THAT AFFECT THE TIMING OF OPERATIONS				
1	No skidding/ yarding operations when soils are saturated or during heavy hillslope runoff. Skidding must only be done when soils are dry or frozen, or on snowpack >40cm.				

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COMMENTS	<p>Surface erosion and soil displacement hazards are high. Gullied terrain in northern half of block. No skidding permitted down gully bottoms (must fall and yard away from gully bottoms).</p> <p>Ground skidding across natural drainage paths must be avoided where practical. Generally, skid trails should run uphill/downhill and should not require excavation/ bladed construction. All skid trails may be built using debris-supported fill slopes to reduce cut bank excavation and the potential for groundwater interception.</p> <p>Winter logging on >40cm snowpack is preferred. Otherwise, logging must be completed in dry site conditions. Spring snow melt and prolonged or heavy periods of rainfall would constitute excessively wet site conditions.</p> <p>If it is not possible to ground skid in 2 ha northern gullied portion of Block 10 without avoiding excessive soil disturbance, then cable yarding of gullied terrain may be required.</p> <p>Skid trails must not result in concentration or redirection of water at any time— natural drainage patterns must be maintained at all times.</p>
REHABILITATION	<p>All skid trails in this block are temporary access structures and must be fully rehabilitated upon completion of harvesting. If harvesting is to be conducted during winter months, trails must be seasonally deactivated prior to the spring freshet by outsloping where practical and installing cross ditches to maintain natural drainage patterns.</p>

5 PERMANENT AND TEMPORARY ACCESS CALCULATION SUMMARY

Description of Access Structure	SU	Dimensions Length x Width	Temporary		Permanent	
			Area (ha)	% of NAR	Area (ha)	% Gross
Proposed Roads	1	270 X 10 m	-	-	0.27	
Existing Roads	-	-	-	-	-	
Landings	1	20 X 50 m	-	-	0.10	
Skid/ forwarding trails	1	~1200 X 4 m	0.48	9	-	
Out of Blk Ldgs	-	-	-	-	-	
Total Temporary			0.48	9		
Total Permanent					0.37	3.5

6 RIPARIAN RETENTION AREA SUMMARY

SU	Riparian ID and Class	RMZ Width (m)	RRZ Width (m)	BA or SPH Retained	Comments (indicate if in a community watershed)
1	N/A	-	-	-	N/A—no riparian areas

7 COARSE WOODY DEBRIS

COARSE WOODY DEBRIS MANAGEMENT STRATEGIES
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Retain a minimum of 10 logs per ha CWD, each >5 meters in length and >20cm diameter. Retain larger diameter CWD where possible, including large, non-merchantable logs.

8 ADDITIONAL NOTES/ CONSTRAINTS

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SILVICULTURE PLAN

LICENSE	C.P.	BLOCK	LOCATION	UTM
K1B	143	10	5.5 km East Harrop Mainline Section C4 (Low Road)	496250E 5491250N

ECOLOGICAL INFORMATION

Standard Unit	NAR (ha)	Zone	Subzone	Variant/Phase	Site Series (series - %)	Elevation (m)			Aspect	Slope position	Soil Texture
						Min	Max	Avg			
1	4.9	ICH	dw	1	01a	920	1060	1000	West	Mid	SL/ LS

RATIONALE FOR STOCKING STANDARD SELECTION

STANDARDS UNIT	CHANGE FROM STANDARD PRACTICE (for example moving Pref. to Accpt or change in MITD)	COMMENT: (for example forest health (DRA) or rocky site)
SU 1	N/A	

STOCKING REQUIREMENTS

Standard unit	BEC	Standards ID	Regen Delay	Early Free-Growing	Late free-growing
1	ICHdw1-01a	18059	7	12	20

Regeneration Layer

SU 1—ID #18059										
Preferred Species			Acceptable Species			Post Spacing Density (sph)				Max Coniferous (sph)
Species	Min Hgt (m)	Footnotes	Species	Min Hgt (m)	Footnotes	Min	-	Max	-	-
Fd	1.4		Bg	1.0		Well Spaced Trees (sph)				
Lw	2.0		Hw	1.0		Target Pref/Acc	Minimum PrefAcc	Minimum Pref	Min Horizontal Dist. Pref/Acc (m)	
Py	1.0					1200	700	600	1.7	
Pw	2.0					Planting or natural regeneration?			Height Relative to Competition (%)	
Cw	1.0					Natural with fill planting as required			150	
Pi	2.0									
Other Required Stocking Information : None										

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SITE PREPARATION	
Area	TECHNIQUE (S) / LIMITING FACTORS/ COMMENTS
SU 1	Not required.
PLANTING or NATURAL REGENERATION	
Area	TECHNIQUE (S) / LIMITING FACTORS/ COMMENTS
SU 1	Natural regeneration to be assessed 3 – 4 years post-harvest to assess need for fill planting to meet stocking requirements.
BRUSHING / STAND TENDING	
Area	TECHNIQUE (S) / LIMITING FACTORS/ COMMENTS
SU 1	Conduct manual brushing if required.

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