

Timber & Community Profile of the Lardeau Valley



May

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I) Executive Summary

With the closure of Meadow Creek Cedar, the forest industry in Kaslo and the Lardeau Valley has been very slow in recent years. This company had been the largest employer in the area and the closure of the operation has resulted in considerable economic and social disruption among the local people.

Approximately 70,000 m³ of Meadow Creek Cedar's quota has become available through a co-operative plan between the Ministry of Forests, Land and Natural Resource Operations and Blue Ridge Timber. This plan includes the need for another partner and the information in this report is designed to provide some basic information that would be useful to a prospective partner interested in this venture.

This document combines an inventory of standing timber, biomass utilization options, and local amenities. The information is designed to supply a potential forest industry investor with both business and lifestyle options for decision making.

The forest profile of Kaslo and the Lardeau Valley has been under-utilized in recent years. There is a need for a manufacturing facility to boost the local economy. With the upturn in the industry well underway, and an abundance of raw material available, the time is right for a forest company to thrive.

This inventory will provide maps that show Forest Development Units and Areas of Operation for all forest tenures coupled with descriptions of timber characteristics, terrain, and the economics associated with development of the resource. The sources of biomass and the options for its utilization are outlined.

The available infrastructure to enable a viable operation is described along with the limitations. To create an encompassing portrait of the local situation, other industries operating in this area are described as well.

But what is it like to live here? The amenities available to enhance a family lifestyle are also presented.

The people who live in this area encompass many and varied lifestyles. Along with resource extraction, there are people working in the arts, agriculture, and small home-based businesses. There is a large component of retirees and summer residents.

It should be recognized by any prospective investor that the pro-development attitude expressed by this inventory report and its authors is not universally represented in the population of residents.

However, a study of the information provided in this timber and community profile will greatly assist anyone with the ability to recognize the exciting opportunity that is waiting to be seized.

II) The Lardeau Valley

The Lardeau Valley begins 25 km north of the village of Kaslo and includes the lands around the north end of Kootenay Lake and the confluence of the Lardeau and Duncan Rivers. It also includes the Lardeau River drainage from Trout Lake and the Duncan River drainage from Glacier National Park. The Duncan River is dammed near Meadow Creek and managed by BC Hydro for water storage on a full draw-down basis. The Lardeau and Duncan Rivers join 500m below the Duncan dam.

There are highways accessing this area from the south from Nelson or Creston, west from Nakusp and New Denver, and north from Revelstoke. Highway 31 via Trout Lake is not suitable for hauling wood products. The access to the Duncan River is by Forest Service Road only.

The nearest airport is in Castlegar, 152 km southwest of Meadow Creek.

There are several small communities in the valley. Lardeau on the west side of Kootenay Lake, Johnson's Landing and Argenta on the east side, while Cooper Creek, Meadow Creek, and Howser to the north, comprise the main settlements.

Meadow Creek is the largest of the settlements. The Meadow Creek store, café, school, post office, fueling station, auto repairs, museum, and market garden are located here. There is also fuel and a convenience store (and the site of the Meadow Creek Cedar mill) in Cooper Creek, 6 Km south.

Boat launching facilities for Kootenay Lake are located in Lost Ledge Provincial Park and Lardeau, while Duncan Lake can be accessed at Howser or Glacier Creek Regional Park.

The service providers for the Valley are:

- ✧ BC Hydro for power
- ✧ Telus for telephone
- ✧ Kaslo Infonet for internet (kin.bc.ca)
- ✧ Yellowhead Road and Bridge for road maintenance (www.yrb.ca)
- ✧ There is no cell service at this time

For more information on the valley: [Lardeau Valley](#)

III) History of the Timber Industry

The timber industry in the Lardeau Valley developed along with the mining boom in the late 19th and early 20th century. The completion of the railway between Lardeau and Gerrard, a community on the south end of Trout Lake, in 1904, enabled the establishment of a large logging and saw milling complex employing 800 at its peak. Timber harvested was tributary to Trout Lake and the rail line. With the close of the mining boom, demand for lumber fell off and the mill closed in 1922.



By the 1950s, heavy equipment had replaced horses. Roads were constructed from Kaslo to Lardeau and the rail line was converted to a road. There was not much forest development until the 1960s when Kootenay Forest Products commenced operation on large private land holdings and crown tenure. Logs were boomed in Lardeau and towed to a large mill in Nelson. Logging camps were established in Marblehead and up Duncan Lake at East Creek. The upper portion of Duncan Lake and Howser Creek were accessed providing high quality spruce for the plywood plant in Nelson. This was the peak of timber harvesting with up to 65 loads a day dumped at Lardeau. By the 1980s, Kootenay Forest Products was in decline and the mill in Nelson closed.

Since the closure of the Kootenay Forest Products mill, one mid-sized operation, Meadow Creek Cedar, was established. It is interesting to note that this operation was successful in spite of the fact that they had no crown timber but relied on log buying and salvage from the Duncan Lake reservoir. The Meadow Creek mill was later purchased by a Japanese company, which acquired crown tenure and became the largest employer for Kaslo and the Lardeau Valley. In this period, the government of BC became a licensee under the Small Business Forest Enterprise program. By the 1990s, the overall area of working forest was reduced by the establishment of new parks and wildlife habitat areas. Companies fell under increased regulation under the Forest Practices Code and other environmental restrictions. In 2005, the company was sold again and mismanaged into receivership. This resulted in only three small operations producing specialty products and using very little local timber. This is the situation today.

IV) Current Forest Sector in the Lardeau Valley

Current Forestry Operations with Contacts

- ✧ **Boards by George Lumber:** This company manufactures beams and lumber. They specialize in custom cutting and buy no local wood. Contact: George Brinkman 250-366-4235
website: www.boardsbygeorge.ca

- ✧ **Hamill Creek Timber Homes:** This company deals exclusively with timber frame homes. This is a highly mechanized operation. They are equipped to build homes in their entirety and do not buy much local wood. Contact: Dwight Smith 250-366-4320
website: www.hamillcreek.com
- ✧ **Lardeau Forest Products:** Small custom cut sawmill specializing in high quality timbers for timber frame home companies. Ben Smith: 855-776 9003
website: www.lardeauforestproducts.ca
- ✧ **Remco Shake and Shingle:** This company produces cedar roofing only and has had limited operations since the economic downturn in 2008. Contact: Ken Wapple 250-366-4358

Logging Contractors

- ✧ **Sunshine Logging:** Cable and ground Contact Jeff Mattes 250-353-7104
- ✧ **Settle Holdings:** Cable and ground. Contact: John Settle 250-353-2915

Road Construction

- ✧ **Sunshine Logging:** As above
- ✧ **Colin Jacobs:** 250-353-2970
- ✧ **Settle Holdings:** As above

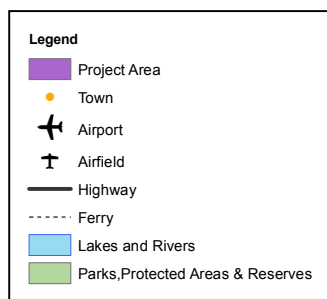
Woodlots and Community Forests

There are five woodlots in the area:

- ✧ **WL 436** Duncan Lake 250-366-4664
- ✧ **WL 438** Jeff Mattes 250-366-7104
- ✧ **WL 491** Jeff Mattes 250-366-7104
- ✧ **WL 494** Peter McAllister peterm@netidea.com
- ✧ **WL1460** Peter Louwerse 250-674-0062
- ✧ **Kaslo and District Community Forest Society:** This is a fixed area tenure located near Kaslo and north into the Lardeau Valley. 250-353-9677. www.kaslocommunityforest.org
- ✧ **BC Timber Sales:** Please refer to the cover map showing the FDU areas of BCTS. Little has been cut here since the economic downturn as there has been no reliable market for logs. This has resulted in a significant undercut situation. While some areas have road infrastructure, there is still a need to secure markets before selling the available timber. Contact: Ministry of Forests and Natural Resource Operations. 250-825-1100.

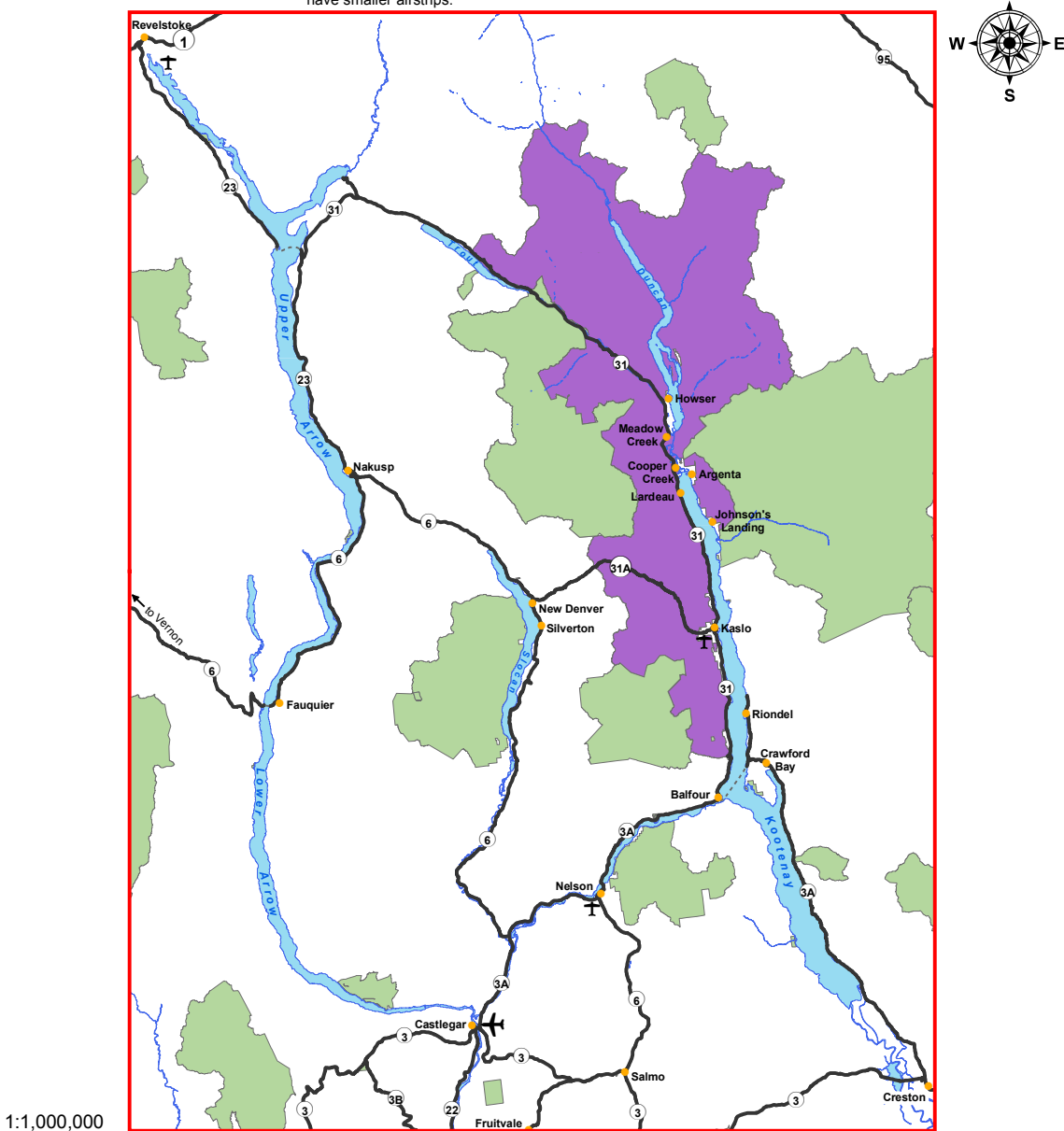
MAPS

Overview map of Study Area Showing Access to the Lardeau Valley, Location of Communities:

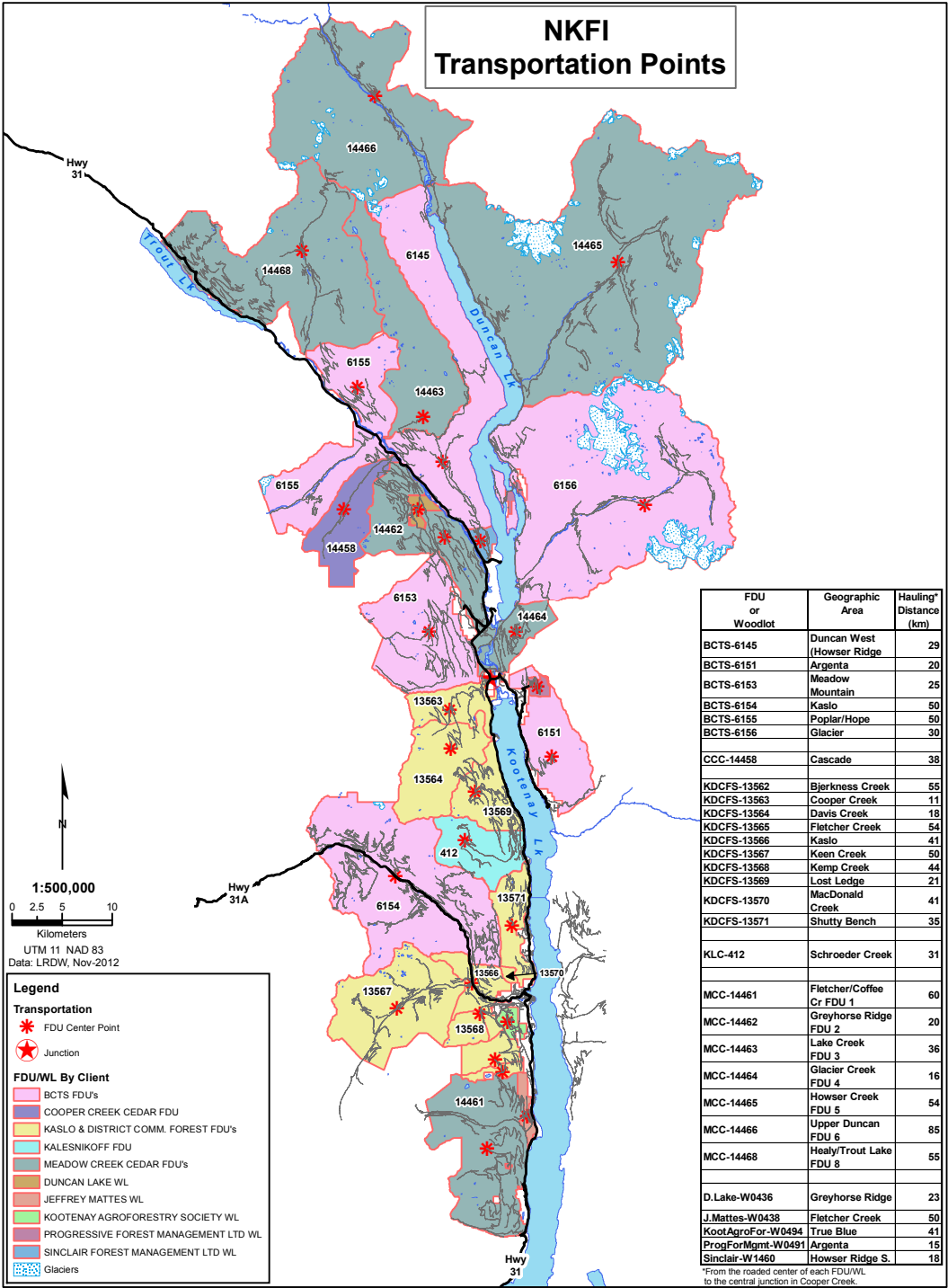


Lardeau Valley Access and Overview

The Lardeau Valley encompasses the north end of Kootenay Lake down to the communities of Johnson's Landing on the east and Lardeau on the west; includes the Lardeau River to Gerrard, at the south end of Trout Lake; takes in all of Duncan Lake and farther north, up the Duncan River. The project area is within the Kootenay Lake Timber Supply Area. The community of Meadow Creek can be accessed from Vancouver via the Trans-Canada (#1) and the Coquihalla (#5) east to Revelstoke, and then south on Hwy #31, for a distance of 715 km, or via the Trans-Canada (#1) and the Hope-Princeton (#3) east to Castlegar, and then north on Hwy #3A/#31 for a distance of 756 km. From Calgary, the access is via the Trans-Canada (#1) west to Revelstoke, and then south on Hwy #31, for a distance of 567 km. The nearest major airport is 152 km south, at Castlegar, but Revelstoke, Kaslo, and Nelson have smaller airstrips.



Map locating Forest Development Units and Showing Areas of Operation of All Companies, Woodlots, Community Forests and BC Timber Sales:



i) TIMBER INVENTORY AND ECONOMICS

Standing Timber

Preamble

The Lardeau Valley is considered to be in the Interior Wet Belt of British Columbia. The positive aspects of this climate are that trees grow quickly and there a large variety of species represented. The negative aspect is the fact that there is high precipitation because our high mountains trap the clouds. This means a shorter work season, extra costs in dealing with snow removal, high road building costs to accommodate runoff, and more difficult planning to be operating in the right place at the right time. The steep and often broken terrain also increases road construction costs and results in higher percentages of cable verses ground skidding.

Rationale

NKFI Timber Analysis Net Down Factors Rationale for the GIS Analysis and Economic Calculations

Table 1 Rationale

Slope of 80% chosen as upper limit of cable harvesting:

- ⤴ Rationale is that slopes steeper than 80% pose safety risks for fallers and chokers.
- ⤴ The soils are less thick on these slopes; rock outcrops and loose rock adds to safety issues.
- ⤴ The areas with over 80% slope are difficult to achieve regeneration objectives due to snow creep flattening trees or repeated occurrence of snow creep causes them to be deformed after being planted.

The cost of regenerating these areas is higher than areas under 80% and the allowance in Ministry of Forests Lands and Natural Resource Operations appraisals can be exceeded.

Site Index 12+ chosen as lowest site class in inventory information compiled:

- ⤴ This site index is chosen as the lower limit where reforestation is economical from the value generated by present stands. As well, these areas can achieve free-to-grow criteria in twenty years or less after harvesting.

Crown Closure of 50% was chosen:

- ⤴ Current natural stands under 50% crown closure are spaced in such a manner that brush species growing amongst the trees impede the ability to plant and successfully re-establish forests on these sites. The cost of regenerating these forest types may exceed the cost allowed in appraisals and the achievement of free-to-grow criteria may not be met.

Stands that are Height Class 3 - 19.5 meters tall or greater in height:

- ⤴ Tree volumes allow for harvesting in these stands; lower tree volumes make harvesting costs higher than past markets have been able to accommodate.

⤴ The lower diameter limit within these stands is a diameter at breast height of 12.5 cm, this was to provide a portion of the volume that could be utilized and is not part of annual allowable cut volumes on any of the licences.

⤴ Tops of trees are not counted in the volumes from the GIS analysis as they are calculated in the waste volumes. The top sized used in the GIS analysis is 10 cm. The waste volume is calculated from a 10 cm top, down to a 5 cm top for all trees.

Area reductions based on:

- ⤴ Side slopes under 80% and
- ⤴ Site index 12 + (top two species in type will achieve 12 meters tall in 50 years)
- ⤴ Crown closure is 50% or greater
- ⤴ Stands in height class 3, 19.5 meters and taller

Abbreviations

FDU	Forest Development Unit
WL	Woodlot
MCC	Meadow Creek Cedar
BCTS	BC Timber Sales
KDCFS	Kaslo and District Community Forest Society
CCC	Cooper Creek Cedar
KLC	Kalesnikoff Lumber Company

Table One**Cost Analysis for NKLFI**

Assumption 1. S&R for BCTS stumpage upset price includes planning, S&R, Road construction, silviculture and administration.

Assumption 2: that the MCC millsite is the marshalling point of all layout, construction, logging, road maintenance and road construction for MCC areas and other licencees.

Assumption 3: profit for woodlots is spread out over layout, administration, harvesting, road construction and equipment.

Cost calculations based on:(All operations based on the site at Cooper Creek)

- 1 Ratios of Cable to Ground Based Harvesting Systems Average slopes on areas on Site Index areas over 12 and on Side Slopes under 80%.
- 2 Side slopes 0-50% Ground Bases Harvest Systems,
- 3 Side Slopes 50-80% Cable Harvesting Systems.
- 4 Ground Based Harvesting Systems on Truck Costs Assumption is \$22.00/m3 as of March 2013
- 5 Cable Based Harvesting Systems on Truck Costs Assumption is \$37.00/m3.as of March 2013

Table 1

FDU or Woodlot	Net Volume m3	Plannng Layout Cruise CP appl. per m3	On truck Logging Cost per m3	Road Main.. Road Constr & Deact. per m3	Truck Cost per m3	S&R Cost per m3	Silvi-culture Site Prep Planting Brushing Surveys per m3	Admin Cost per m3	Total Cost per m3
BCTS-6145	1352398	\$4.50	\$27.55	\$7.60	\$13.50	\$6.50	\$5.00	\$3.50	\$68.15
BCTS-6151	55347	\$4.50	\$27.40	\$6.60	\$8.10	\$6.50	\$4.50	\$3.50	\$61.10
BCTS-6153	774523	\$5.50	\$28.00	\$7.60	\$10.80	\$6.50	\$5.00	\$3.50	\$66.90
BCTS-6154	1669645	\$5.00	\$28.60	\$6.60	\$10.80	\$6.50	\$5.00	\$3.50	\$66.00
BCTS-6155	825296	\$5.00	\$29.50	\$7.60	\$10.80	\$6.50	\$5.00	\$3.50	\$67.90
BCTS-6156	1044392	\$5.50	\$30.70	\$7.60	\$8.00	\$6.50	\$4.50	\$3.50	\$67.90
Total	7321392								
CCC-14458	124010	\$5.50	\$30.54	\$7.60	\$9.45	\$6.50	\$5.00	\$3.50	\$68.09
KDCFS-13562	109245	\$4.50	\$29.62	\$6.60	\$9.45	\$3.50	\$4.50	\$3.50	\$61.67
KDCFS-13563	456081	\$4.50	\$27.85	\$6.60	\$8.10	\$3.50	\$4.50	\$3.50	\$58.55
KDCFS-13564	324903	\$4.50	\$28.87	\$6.60	\$8.10	\$3.50	\$4.50	\$3.50	\$59.57
KDCFS-	43748	\$4.50	\$28.75	\$6.60	\$10.80	\$3.50	\$4.50	\$3.50	\$62.15

13565									
KDCFS-13566	457272	\$4.50	\$28.50	\$6.60	\$8.10	\$3.50	\$4.50	\$3.50	\$59.20
KDCFS-13567	467020	\$4.50	\$31.90	\$6.60	\$10.80	\$3.50	\$4.50	\$3.50	\$65.30
KDCFS-13568	65415	\$4.50	\$33.40	\$6.60	\$10.80	\$3.50	\$4.50	\$3.50	\$66.80
KDCFS-13569	254446	\$4.50	\$28.87	\$6.60	\$8.10	\$3.50	\$4.50	\$3.50	\$59.57
KDCFS-13670	15462	\$4.50	\$30.54	\$6.60	\$10.80	\$3.50	\$4.50	\$3.50	\$63.94
KDCFS-13571	431629	\$4.50	\$28.60	\$6.60	\$10.80	\$3.50	\$4.50	\$3.50	\$62.00
Total	2625221								
KLC-412	398957	\$4.50	\$27.40	\$6.60	\$8.10	\$6.50	\$4.50	\$3.50	
MCC-14461	1110223	\$4.50	\$27.85	\$6.60	\$10.80	\$12.00	\$5.00	\$3.50	\$70.25
MCC-14462	932752	\$4.50	\$25.15	\$5.60	\$8.10	\$9.00	\$5.00	\$3.50	\$71.33
MCC-14463	123499	\$4.50	\$33.25	\$9.60	\$10.80	\$1.60	\$5.00	\$3.50	\$68.25
MCC-14464	266180	\$4.50	\$28.30	\$6.60	\$8.10	\$9.00	\$5.00	\$3.50	\$65.00
MCC-14465	1174253	\$4.50	\$29.20	\$6.60	\$13.05	\$6.50	\$5.00	\$3.50	\$68.36
MCC-14466	446513	\$4.50	\$28.30	\$6.60	\$16.00	\$0.25	\$5.00	\$3.50	\$64.14
MCC-14468	113091	\$4.50	\$32.65	\$6.60	\$10.80	\$4.00	\$5.00	\$3.50	\$67.05
Total	4166511								
D.Lake-W0436	160340	\$4.00	\$24.20	\$4.50	\$8.10	\$4.00	\$4.50	\$3.50	\$52.80
J. Mattes-W0438	78917	\$4.00	\$25.30	\$3.50	\$10.80	\$4.00	\$4.50	\$3.50	\$55.60
KootAgroFo-W0494	98503	\$4.00	\$24.55	\$4.00	\$10.80	\$4.00	\$4.50	\$3.50	\$55.35
ProgFor Mgmt-W0491	160832	\$4.50	\$25.45	\$5.00	\$8.10	\$4.00	\$4.50	\$3.50	\$55.05
Sinclair-W1460	51177	\$4.50	\$27.40	\$4.00	\$6.75	\$4.00	\$4.50	\$3.50	\$54.65
Total	549769								

Table Two

FDU or Woodlot	Net Area ha	Net Volume m3	Ave Vol/ ha	Douglas fir m3	Hemlock m3	Cedar m3	Larch m3	Spruce m3	PI m3
BCTS-6145	4789	1352398	282	749151	216384	135239			
BCTS-6151	2089	755347	362	339906			166176		113302
BCTS-6153	2220	774523	349	371771	77452		154905		
BCTS-6154	5161	1669645	324	400714	500893		283840		
BCTS-6155	2162	825296	382	420901	140300				82530
BCTS-6156	5929	1944392	328	758313	233327		340991		213883
Total Ld. Spec.	22350	7321601	328	3040756	1168356	135239	945912		409715
Lead Spec. Vol.		5699978		77.85%					
CCC-14458	348	124010	356	24802	33483	19842		34723	
Lead Spec. Vol.		112850		91.00%					
KDCFS-13562	283	109245	386	43698	30589	1217			
KDCFS-13563	1193	456081	382	164189	114202	50169	95770		
KDCFS-13564	968	324903	336	81226	74728	38988	45486	51984	
KDCFS-13565	127	43748	344	24936	5250		8312		
KDCFS-13566	1137	457272	402	178336	105173	45727	92454		
KDCFS-13567	1431	467020	326	186808	121425				
KDCFS-13568	161	65415	406	24204	13737	7850		10466	
KDCFS-13569	806	254446	316	68700	63611	27989	58523		
KDCFS-13570	40	15462	387	8968			3247		
KDCFS-13571	1138	431629	379	202866	90642	51795	73377		
Total Ld. Spec.	7284	2625221	360	983931	619357	223735	377169	68450	
Lead Spec. Vol.		2272642		86.57%					
KLC-412	1004	398957	397	79791	119687	51864	51864	47875	
Lead Spec. Vol.		350901		87.95%					

FDU or Woodlot	Net Area ha	Net Volume m3	Ave Vol/ ha	Douglas fir m3	Hemlock m3	Cedar m3	Larch m3	Spruce m3	PI m3
MCC-14461	2832	1110223	392	355271	199840	111022	166533		<i>166533Bl</i>
MCC-14462	2619	932752	356	279826	195878	93275	17813		
MCC-14463	301	123499	410	24700	48165	16055	17290	16055	
MCC-14464	761	266180	350	138414	61221				
MCC-14465	3677	1174253	319	293563	387503	176138		129168	
MCC-14466	1406	446513	318	200931	163280	62512			
MCC-14468	384	113091	295	55415	35058	14702			
Total Ldg Spec	11980	4166511	348	1348120	1090945	362793	201636	145223	<i>166533Bl</i>
Lead Spec Vol.		3315250		79.57%					
D.Lake-W0436	363	160340	442	32068	46499	46499	39465		
J.Mattes W0438	197	78917	401	41037	7892	14994	7892		
KootAgroFor W0494	250	98503	394	54177	25611	10835			
ProgForMgmt -W0491	444	160832	362	62724		17692	46641		22516
Sinclair	151	51177	339	34800			5629		
Total Ld Spec.		549769		224806	89002	90020	99627		22516
Lead Spec Vol.		525971		95.67%					
Totals	44371	15186069	340	5702206	3111830	3013472	1494708	296271	432231
									<i>166533Balsam</i>

Table Three

FDU or Woodlot	Slope <50%	Slope 50 % to 80%	Ratio Ground vs Cable	Average Cost On Truck	Total Net Area by FDU or Woodlot
	ha	ha		\$/m3	ha
BCTS-6145	3005	1784	63/37	\$27.55	4789
BCTS-6151	1326	762	64/36	\$27.40	2088
BCTS-6153	1332	888	60/40	\$28.00	2220
BCTS-6154	2900	2256	56/44	\$28.60	5156
BCTS-6155	1079	1083	50/50	\$29.50	2162
BCTS-6156	2464	3465	42/58	\$30.70	5929
BCTS Total	12106	10238	55/45	\$28.79	22344
CCC-14458	148	200	43/57	\$30.54	348
KDCFS-13562	139	144	49/51	\$29.62	283
KDCFS-13563	725	468	61/39	\$27.85	1193
KDCFS-13564	519	449	54/46	\$28.87	968
KDCFS-13565	70	57	55/45	\$28.75	127
KDCFS-13566	569	568	50/50	\$28.50	1137
KDCFS-13567	491	940	34/66	\$31.90	1431
KDCFS-13568	39	122	24/76	\$33.40	161
KDCFS-13569	465	341	54/46	\$28.87	806
KDCFS-13570	19	21	47/53	\$30.54	40
KDCFS-13571	638	500	56/44	\$28.60	1138
KDCFS Total	3674	3610	50/50	\$29.50	7284
KLC-412	638	366	64/36	\$27.40	1004
MCC-14461	1737	1095	61/39	\$27.85	2832
MCC-14462	2077	542	79/21	\$25.15	2619
MCC-14463	74	227	25/75	\$33.25	301
MCC-14464	445	316	58/42	\$28.30	761
MCC-14465	1907	1770	52/48	\$29.20	3677

MCC-14466	820	586	58/42	\$28.30	1406
MCC-14468	111	273	29/71	\$32.65	384
MCC Totals	7171	4809	60/40	28.05	11980
D.Lake-0436	312	51	86/14	\$24.20	363
J.Mattes-W0438	154	43	78/22	\$25.30	197
KootAgroFor WC	208	42	83/17	\$24.55	250
ProgFor Mgmt-W	343	101	77/23	\$25.45	444
Sinclair-W1460	97	54	64/36	\$27.40	151
Grand Total All FDU's and Woodlots	24851	19514	56/44	\$28.60	44365

Wood Residue Volumes

Timber & Community Profile of the Lardeau Valley

Wood Residue Volumes

The residue volume estimate is based on calculations of bark thickness of the average log for each species. The average volume of bark for all species is 13.8% of the wood volume.

Bark Volumes by species estimated:

Douglas Fir

Average log is: Butt diameter 42 cm inside bark, 47 cm outside bark
Top diameter of 5 cm inside bark, 5.6 cm outside bark
Length 33 meters
Volume of solid wood is 2.318 m³
Volume of bark and wood is 2.6056 m³
Volume of bark is 0.2876 m³
Bark volume as percentage of wood volume is 12.0%

Hemlock

Average log is: Butt diameter 45 cm inside bark, 48 cm outside bark
Top diameter of 5 cm inside bark, 5.6 cm outside bark
Length 29 meters
Volume of solid wood is 2.3359 m³
Volume of bark and wood is 2.7514 m³
Volume of bark is 0.4155 m³
Bark volume as percentage of wood volume is 10.0%

Cedar

Butt diameter 48 cm inside bark, 51 cm outside bark
Top diameter of 5 cm inside bark, 5.6 cm outside bark
Length is 30 meters
Volume of solid wood is 2.743 m³
Volume of bark and wood is 3.102 m³
Volume of bark is 0.359 m³
Bark volume as percentage of wood volume is 13.1%

Larch

Average Log is: Butt diameter inside bark is 40 cm, outside bark is 43 cm
Top diameter inside bark is 5 cm, outside bark is 5.6 cm
Average height is 33 meters
Volume of solid wood is 2.103 m³
Volume of wood and bark is 2.4323 m³
Volume of bark is 0.3293 m³
Bark volume as percentage of wood volume is 15.6%

Spruce

Average Log is: Butt diameter inside bark is 40 cm, outside bark is 42 cm
Top diameter inside bark is 45 cm, outside bark is 5.6 cm
Average height is 30 meters
Volume of solid wood is 1.914 m³
Volume of wood and bark is 2.116 m³
Volume of bark is 0.202 m³

Timber & Community Profile of the Lardeau Valley

Bark volume as percentage of wood volume is 10.6 %

Lodgepole pine
Average Log is: Butt diameter inside bark is 25 cm, outside bark is 25.6 cm
Top diameter inside bark is 5cm, outside bark is 5.5 cm
Average height is 28 meters
Volume of solid wood is 0.715 m³
Volume of wood and bark is 0.756m³
Volume of bark is 0.041m³
Bark volume as percentage of wood volume is 5.7 %

Balsam
Average Log is: Butt diameter inside bark is 40 cm, outside bark is 41.5 cm
Top diameter inside bark is 5cm, outside bark is 5.6 cm
Average height is 28 meters
Volume of solid wood is 1,7888 m³
Volume of wood and bark is 1,932 m³
Volume of bark is 0.1432 m³
Bark volume as percentage of wood volume is 8 %

Bark Volumes by the six leading species and their volumes.
Solid wood volumes to a 5 cm top were used for these species.

1 Fir 12 % of solid wood	684,264 m ³
Hemlock 10% of solide wood	311,183 m ³
Cedar 13.1% of solid wood	394,765 m ³
Larch 15.6% of solid wood	233,174 m ³
Spruce 10.6% of solid wood	31,404 m ³
Pine 5.7% of solid wood	24,637 m ³
Balsam 8%	<u>133,264 m³</u>
SubTotal of six leading species vol.	1,692,750 m³

Remaining volume of bark to minor
species assumption would average
13.8% x remaining volume of mixed
species of 2, 908,477 m³

401, 370 m³.

Total waste bark is **2,094,120 m³**

This volume can be increased with decayed wood and some wood being removed during the barking process by another 3-4 % to 17% (using 3.2% as an average) of 67,012 m³ to a grand total of waste bark

2,161,132 m³

The volume from a 4.5 inch top to a 2 inch top is calculated to be 15% of the total tree volume. This volume is added to residue in solid wood and is

2,277,910 m³

The total of wood waste available bark and tops is

4,439,042 m³

Using the volume of 15, 186, 069 m³ (Table 2) divided by current AAC of 229,000 m³ per year, available waste is 66 years

67, 258 m³/year

Other waste volumes available is from “Wood Waste Study in the Lardeau Valley” a Bioenergy feasibility study prepared by Reg Renner, Atticus Financial, John Cathro, Cathro Consulting, Bruce Blackwell, B.A. Blackwell & Associates Ltd. March 2011 for: Lardeau Valley Opportunity Links Society.

Only two of the operations mentioned in the report are currently operating and the potential for the Meadow Creek Cedar Ltd. Sawmill to start up is included in the data below.

Hamill Creek Timber	hog fuel	2,000 wet MT/yr
	sawdust	800 BDMT/yr
Boards by George	hogfuel	1,750 wet MT/yr
	planer shavings	1,200 BDMt/yr
Meadow Creek Cedar Ltd.	hogfuel	5,625 MT/yr/shift

Information from previous operations of Meadow Creek Cedar Ltd. Not in above report.	
Chips	13,050 wet MT/yr/shift

ii) BIOMASS UTILIZATION

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Categories

Compressed Wood Products

These are the most commonly used products to market wood waste. They can take many forms from fuel pellets to construction materials. It is no longer acceptable to burn wood waste; hence the innovations have developed that enable this waste to turn a profit. Some examples of this category of product are given in the appendix under Biomass Utilization: Compressed Wood Products.

Power Generation

Power to the Lardeau Valley is not always reliable. There can be surges and outages that can last for as long as two days. As well as the lack of production, there is sometimes the cost of having to replace burned out electric motors. Being able to generate power from wood waste would supplement the existing grid and eliminate the downtime. There are designs on the market now that can be tailored to the amount of waste available. Some examples of power generation from biomass are given in the appendix under Biomass Utilization: Power.

Heat

There are many applications for the use of biomass for heat. Single structures or groups of structures can be heated with biomass boilers and an associated greenhouse operation could be kept warm year round. Heat could be used to dry lumber in a kiln. A recent study was conducted entitled "Wood Waste Study in the Lardeau Valley" which can be referenced in the appendix under Biomass Utilization: Heat.

Availability of Fibre

Existing Wood Operations - existing mills currently burn their waste. The distance would be short to truck it to a new utilization facility. Woodlots and the Kaslo and District Community Forest would also be sources of fibre. (See also ["Wood Waste Study in the Lardeau Valley"](#))

Hog Fuel Generation from New Mill - hog fuel production from the potential new mill.

Tree Tops from 4" To 2" - the feasibility of hauling wood down to a 2" top could be investigated.

Grade 4 Wood – utilization of grade 4 wood from problem forest types or high elevation timber.

iii) VALUE ADDED WOOD PRODUCT OPTIONS

Sawmills and shake and shingle mills - there are still stands containing "salvage type" cedar in some FDU's. Markets have deteriorated somewhat for these products, but they are still a viable product.

Firewood - there is a small local market. The price per cord in Calgary would make a B-Train load viable.

Log Yard - this would be redundant when a new facility is in place. Until then, value could be added to raw logs by peeling, sorting, and possibly canting logs and utilizing the biomass. A log market would be created.

Timber Frame Beams - this is a high end market. Because most customers want “free of heart” beams, most of the local timber is too small.

Decking and Railings - there is high demand for this product. It can be made from many species if preservative treatment is employed.

Fencing - as above.

Rig mats – the products are an excellent way to use low quality wood or undesirable species.

Character Wood - misshapen stems or logs with attached roots are commanding high prices from affluent clientele, often used in timber frame or log homes.

Sash and Door – these are products that are always in demand.

Furniture manufacture – there is a range of markets from patio furniture to high-end designs for affluent clientele.

Carvers and Designer Artists of Wood - the sky is the limit in this field.

V) OTHER INDUSTRIES IN THE LARDEAU VALLEY

In a survey conducted in 2010 by the Lardeau Valley Opportunity Links Society, forestry and agriculture were the two main industries, followed by tourism in terms of local interest and participation.

Agriculture

All agricultural operations are small scale. Local eggs, beef, pork, and lamb are available.

There are three market garden operations. "Lakehead and Beyond Produce Society", includes a green house facility as well as vegetables. One operation grows and markets heritage seed worldwide (www.stellarseeds.com). There is a local business building small greenhouses for home use (<https://www.facebook.com/ArgentaGreenhouseCo>).

Tourism

Many people visit this area for outdoor pursuits. These include the first cat ski operation in the world, (www.selkirkwilderness.com), heli-skiing, ski touring and cross country skiing, wildlife viewing and photography, hiking, fishing, and camping.

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Mining

There are no mines operating at present, although at the turn of the century mining was the engine that drove industry in this area. The potential is high for future mining of low grade silver, lead and zinc. There is a high grade marble deposit at Marblehead that has operated in the past.

Artisans

There is a high proportion of Artisans in the Kootenays. The Lardeau Valley is fortunate to have wood carvers, sculptors, painters, potters, photographers, writers, and weavers who work and make their homes here.

VI) INFRASTRUCTURE & WORKFORCE

i) LOCATIONS OF MAIN ACCESS ROADS

Highway 31 is narrow and winding, therefore, hauling time is slower than one would expect on a paved highway. It is fairly well maintained year round. North of Lardeau there are steep bluffs above the road which shed snow in winter closing the road for short periods. They are usually opened within a day.

The pavement ends at Marblehead just north of Meadow creek. A well maintained gravel road suitable for heavy hauling continues to an abandoned settlement named Gerrard at the south end of Trout Lake. North of Gerrard, the class of road deteriorates seriously.

The Duncan River is accessed by a Forest Road. While constructed to haul road standards, it is not maintained and requires extensive surfacing. For the original pass of harvesting it was built to 140 km, but in recent years the last 50 km have not been maintained as the area received wildlife habitat designation. This includes the Westfall River drainage, the main tributary of the Duncan.

Major spur roads access tributaries of both the Lardeau and Duncan. These include Cascade, Poplar, Healy, Hope, and Lake Creeks in the Lardeau and Glacier, North, and Howser Creeks in the Duncan. Another major spur is located between the two drainages on Howser Ridge.

ii) LOCAL WORKFORCE

The population in Kaslo and Regional District Area D, which includes all communities north of Ainsworth, is about 1500. A third of these residents are temporary and maintain a home address elsewhere. A substantial proportion of people are middle or old aged. This point outlines the need for development of industry to provide year round work to enable young families to live here and inject the necessary vitality into the communities.

When Kootenay Forest Products, and later, Meadow Creek Cedar, were operating to capacity, there were plenty of opportunities for work and no shortage of capable people to seize them. This will

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happen again with the construction of a mill coupled with the revitalization of the forest industry to supply it. Young families will be able to stay together instead of one family member having to work away. Our communities will thrive again. It is expected that some on-the-job training will be required.

iii) POWER AVAILABILITY BY AMOUNT WITH TABLE OF ENERGY USE

VII) LOCAL & REGIONAL AMENITIES

Because of the low population base and rural nature of our communities, the large service centres are Nelson and Castlegar.

Basic necessities of life and others products/services, are readily available in Kaslo, Cooper Creek, and Meadow Creek.

- ⤴ Fuel is always available in the same communities and in bulk by daily truck service.
- ⤴ There are machinists and welders here needing work.
- ⤴ There are carpenters, plumbers, and electricians all working now but often reliant on retired or semi-retired people coming into the area.
- ⤴ Education and Health Care are covered below.
- ⤴ Roads are maintained by Yellowhead Road and Bridge.
- ⤴ Dumps are located in Kaslo and Marblehead
- ⤴ There is weekly bus service to Nelson.
- ⤴ Postal service is available six days per week in Kaslo and three days per week in Meadow Creek and Argenta.
- ⤴ Complete office services are available in Kaslo
- ⤴ High speed internet is available through a local private enterprise to most areas in the valley.
- ⤴ CBC radio has a booster transmitter in Cooper Creek - Frequency 89.9

i) EDUCATION

Lardeau Valley:

Jewett Elementary School

Meadow Creek Road
Box 550 Kaslo BC
V0G1M0
Ph: 250 366 4224
Fax: 250 366 4429

Grade K-5

School District No.8 Kootenay Lake

Kaslo:

J.V. Humphries Elementary Secondary School

500 6th Street

Box 577

Kaslo, BC V0G 1M0

(250) 353-2227

(250) 353-7434

www.sd8.bc.ca

Grades K - 12

School District No. 8 - Kootenay Lake

Columbia Basin Alliance for Literacy- Area D and Kaslo

Phone: 250 353 7691 Fax: 250 353 7694

Email: bszuta@cbal.org Website: www.cbal.org

Programs offered through CBAL: Books for Babies

- 6 Family Night Out
- 7 Parent and Child Time
- 8 Parent Child Mother Goose
- 9 Parents Reading Children Succeeding
- 10 Scrabble Club
- 11 Stress Free Reading at Home Workshop
- 12 Annual Literacy events include
 - 1 Families Behind Books
 - 2 Family Literacy Week
 - 3 All Family Literacy Programs are free of charge

Lake Side Learning

Lakeside Learning Center provides instruction in the core secondary curriculum with students attending JVH for their elective course selections.

404 Front St,

Kaslo BC, V0G 1M0

Phone: 250 353 2200

Selkirk College

421 Front Street

Box 1149

Kaslo, BC V0G 1M0

Phone: 250 353-2618

Fax: 250 353 7121

Website: www.selkirk.ca

Selkirk College serves as a resource centre and meeting place for current and potential students. The college also has campuses in Nelson and Castlegar.

Distance Education School of the Kootenays (DESK)

Website: [DESK](#)

"An innovative centre for online learning. At DESK, each student is offered a unique learning experience. Whether you are looking for BC Ministry of Education K-12 curriculum leading to Grade 12 graduation, or unique locally developed courses, DESK has a course or program right for you."

ii) ACCOMMODATIONS

Lardeau Valley

Campsites:

- ⤴ Lost Ledge and Davis Creek Campgrounds: Two popular camping destinations located along the northwest shore of Kootenay Lake, just south of Lardeau: ([Lost Ledge and Davis Creek](#))
- ⤴ Glacier Creek Regional District Campground: ([Glacier Creek Regional Park](#))
- ⤴ Lardeau Valley Community Club campsite: Located at the Lardeau Valley Community Club hall grounds in Meadow Creek, this small campsite is centrally located in the valley, with new hot/cold showers and washrooms. Contact; lvhall@lardeauvalley.com or 2503664236 for details.

Kaslo

Hotels, Motels, B&B's: The Visit Kaslo and Area Guide has excellent information about the area, including a comprehensive list of accommodation in Kaslo and Area D:

(<http://www.visitkaslo.com/directory/accommodations>)

iii) HEALTHCARE

Lardeau Valley

- ⤴ 911 service
- ⤴ 5 First Responders living in the Lardeau Valley (accessed via 911)
- ⤴ BC Ambulance responds to calls in the Lardeau Valley. They are based in Kaslo and are dispatched via the 911 operator.

Kaslo

Victorian Community Health Centre of Kaslo

673 A Avenue

Kaslo, BC V0G-1M0

Urgent Care 24 hour & Residential Care

Phone: 250 353 2211

Fax: 250 353 2747

Kaslo Primary Health Care Services/Health Unit

673 A Avenue - Lower Level (VHK) Kaslo, BC V0G-1M0

Phone: 250-353-2291

Fax 250-353-2738

Open Mon to Fri 900 - 430

- ⤴ Physician Clinic
- ⤴ Physiotherapy
- ⤴ Public Health
- ⤴ Mental Health
- ⤴ Lab services
- ⤴ Home Care
- ⤴ Palliative Care

The Primary Health Centre is also accessed by visiting specialists such as optometrists, respiratory technicians, etc on an ongoing basis.

(<http://www.interiorhealth.ca/sites/betterhere/OurCommunities/KootenayBoundary/Pages/Kaslo.aspx>)

Kaslo Dental Clinic

Dr Holley Stamer 250-353-7711

iv) OUTDOOR RECREATION

Lardeau Valley

Selkirk Wilderness Skiing (snow cat operation)

Snow cat skiing was pioneered in 1975 by Allan and Brenda Drury in the small community of Meadow Creek, BC in the south east corner of British Columbia, 1 1/2 hours north of Nelson. Over the past 36 years, the Drurys and their staff at Selkirk Wilderness Skiing have developed a loyal following amongst deep powder skiers and snowboarders looking for an alternative to both lift-serviced and helicopter skiing and riding. (<http://www.selkirkwilderness.com>)

White Grizzly Skiing (snow cat operation)

White Grizzly cat skiing offers premium cat skiing adventures in some of the world's best ski conditions and terrain near Meadow Creek, BC. (www.whitegrizzly.com)

Grizzly Bear Ranch Bear viewing and hiking

Grizzly Bear Ranch is a small, specialized bear-viewing lodge in southern British Columbia offering grizzly and black bear viewing holidays. Located in a remote valley about half way between Vancouver and Calgary, the ranch was opened by Julius and Kristin in 2006. Since then, they have endeavoured to offer an excellent and personalized bear-viewing experience, superior cuisine, well-appointed accommodation and first-class hospitality to a limited number of guests each year.

(<http://grizzlybearranch.ca/>)

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This area is rich in history with mining and forestry interest dating back to the late 1800's. There are hundreds of kilometers of old mining and logging roads to explore. From many of these roads world renowned points of interest can be accessed by trail. (<http://www.trailpeak.com/trail-Meadow-Mountain-near-Kaslo-BC-6156>)

Monica Meadows (<http://www.trailpeak.com/trail-Monica-Meadows-near-Kaslo-BC-5768>)

Jumbo Pass (<http://www.trailpeak.com/trail-Jumbo-Pass-Duncan-Lake-side-near-Kaslo-BC-5766>)

Purcell Wilderness Conservancy (<http://www.env.gov.bc.ca/bcparks/explore/parkpgs/purcell/>)

Kaslo and Area D (South)

Retallack Lodge Snow Cat Skiing

Retallack provides world-class cat skiing, snowboarding, and summer mountain experiences in the remote wilderness high up in the Selkirk Mountains of BC. It's one of those out-of-the-way places that you'll never forget. (<http://www.retallack.com>)

Kaslo Golf Club

Historical 9-hole golf course and stunning timber frame clubhouse on beautiful Kootenay Lake overlooking the village of Kaslo, BC. (<http://kaslogolf.org/>)

Kaslo Skate Park

Found in a very scenic location, opposite the ball park in Vimy Park, this space is used frequently by skateboarders. All ages participate and it is great seasonal entertainment for rider and watchers alike. (<http://visitkaslo.com/article/sk8park>)

Kaslo Tennis Club

Kaslo has two fine tennis courts, located on the south end of town by the arena. If you're interested in an afternoon match, or if you want information on joining the Kaslo Tennis Club, both can be arranged at the Kaslo Motel. (<http://visitkaslo.com/article/kaslo-tennis>)

Ainsworth Hot Springs

Ainsworth Hot Springs Resort features three odorless pools, a 150 foot horseshoe cave, a main lounging pool, and a stream-fed cold plunge. The pools provide the perfect place to relax and enjoy some of West Kootenay's majestic scenery – Purcell Mountains and Kootenay Lake. Our 41 room Resort was winner of the Excellence in Housekeeping Award from Tourism BC. (<http://www.hotnaturally.com/>)

v) OTHER LARDEAU VALLEY POINTS OF INTEREST

Lardeau Valley Historical Society Museum

This historic fisheries building, moved from Gerrard to where it now stands in Meadow Creek, contains a collection of historic artefacts and memorabilia from the families and residents of the Lardeau Valley area and beyond. Contact: museum.lvhs@gmail.com Open: Sat & Sun in July and August.

The Marble Quarry

Large blocks of marble were cut from an underground quarry (and some surface areas) in the late 1800's and early 1900's these blocks were further manufactured at a site just south of the quarry, referred to as Marble Head. This was also the load out area for the train. The product was shipped to various locations around Canada and the USA.

Duncan Dam

One of the key sites built on the Columbia River and tributaries in the mid 1960s. The dam (officially a reservoir) was built on the Duncan River just upstream of the confluence of Duncan River and Lardeau River.

Meadow Creek Spawning Channel

The 3.3 km looping spawning channel was the largest of its kind in the world when it was built in 1967, with BC Hydro funds, compensating for upstream spawning habitat lost due to the construction of Duncan Dam. To this day, the channel continues to play a very important role for kokanee; it accounts for about 75% of total kokanee fry production in Kootenay Lake.

(<http://www.env.gov.bc.ca/kootenay/fsh/main/spawning.htm#fifth>)

This area is located near or on two large lakes:

Kootenay Lake is known for world class Gerard Rainbow and is also home to Bull Trout (Dolly Varden) and Kokanee.

Duncan Lake (enlarged by the Duncan Dam) is home to Bull Trout and Kokanee populations. Both lakes provide summer recreation including swimming and boating.

Duncan Lake is a man-made reservoir in the [Kootenay](#) region of [British Columbia](#), [Canada](#), formed by [Duncan Dam](#) and about 45 km in length. It is fed by the [Duncan River](#), which forms part of the boundary between the [Selkirk Mountains](#) to the west and the [Purcell Mountains](#) to the east. Below Duncan Dam is the head of [Kootenay Lake](#).

Prior to inundation there was a lake of shorter length at the same location, also named Duncan Lake but also known as Upper Kootenay Lake or Upper Kootenai Lake. The name comes from the Duncan River's namesake, John "Jack" Duncan, prospector, who ran for election but did not win the Kootenay District seat on the colonial Legislative Council of British Columbia.

vi) RECREATION FACILITIES

Lardeau Valley Communities

Lardeau Valley Community Club:

Timber & Community Profile of the Lardeau Valley

The purpose of the society is to manage and maintain a community hall to be used for cultural, recreational, education and other community activities and to promote community improvement.

Contact: LVCC PO Box 12 Meadow Creek BC V0G1N0

Ph: 250 3664236 email: [Lardeau Valley Community Club](#)

Argenta Community Association:

This is a non-profit group which cares for the physical building (the Argenta Community Centre) and all things related to this, such as events, workdays, etc. To book the hall: [Argenta Hall bookings](#) For all other info contact: Argenta Community Association, G.D. Argenta BC V0G1B.

Johnsons Landing Community Association:

A non-profit society focused on the care and maintenance of the community hall and grounds in Johnsons Landing. Contact: President, JLCA: RR1 S4 C25 Kaslo BC V0G1M0

Kaslo and Area

Kaslo's Arena:

This facility becomes the focus of the lives of many families during the winter months. From toddlers on cheese cutters to Old-timers hockey, the ice sees just about everyone in town.

The Curling Rink:

This much used building is neighbor to the hockey rink. With a men's, women's and mixed league, a junior program, a drop-in night and an active social club, odds are you will find yourself at the Arena (on Arena Road) for one reason or another.

The Langham Cultural Society:

This cultural society has been a part of the Kaslo and North Kootenay Lake Community for 39 years and, as well as caring for the beautiful heritage building; the space is used for artists and small businesses, and ongoing programming. (<http://www.thelangham.ca/>)

vii) NON PROFIT SOCIETIES AND OTHER SOCIAL GROUPS

Groups in the Lardeau Valley

See the local website for the Lardeau Valley list of groups operating in this valley;

(<http://www.lardeauvalley.com/index.php?page=groups>)

Groups and organizations in Kaslo and Area

Kaslo and area is fortunate to have over 60 active non-profit groups and societies, many open to residents and visitors alike. The sheer number and diversity of organizations demonstrates the outstanding level of volunteer activity within our small community.

(<http://www.kaslochamber.com/community/organizations.php>)

VIII) Appendices

To access any of these documents please contact [LINKS](#).

1. Biomass Utilization: Compressed Wood Products

[Compressed Wood Products](#)

[Biologs Montana](#)

2. Biomass Utilization: Power

[COGENCanada](#)

[Biomass: McMasters](#)

[Biomass for Electrical Generation](#)

3. Biomass Utilization: Heat. Wood Waste Study in Lardeau Valley

[Wood Waste Study in the Lardeau Valley](#)

4. Wood Based Biomass Energy Potential of BC

[Wood Based Biomass Energy Potential of BC](#)

5. Table of Power Consumption

[Power Consumption, Lardeau Valley](#)

6. Map of Cooper Creek lease area for potential log yard

[Potential log yard](#)

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