
Central Kootenay Region Timber Harvesting & Processing Employment Survey

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Presented to:

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Acknowledgements and Disclaimer

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Forest licensees and contractors throughout the Kootenay region contributed employment and harvest data to this study. We would like to express our sincere thanks to all the companies and their employees who expended considerable effort in completing the questionnaires. Without their help, this work would not have been possible.

In developing the industry employment estimates in this study, the consultants have made several assumptions and utilized information gathered under the time and resource constraints imposed on this study. The assumptions and information are thought to be reasonable and suitable for the purposes of this analysis, but should not be relied upon for purposes other than conducting general socio-economic impact assessments.

About the Consultants

Pierce Lefebvre Consulting specializes in providing economic and management consulting services to its private and public sector clients. The company was formed in 1994 when Sylvie Lefebvre established the firm together with Claude Pierce, an economist who had been an independent consultant since 1990.

Sylvie Lefebvre is a professional economist and a Certified Management Consultant (CMC) with over 26 years of consulting experience, including 14 years as principal of *Pierce Lefebvre Consulting*, 10 years at Price Waterhouse (now PriceWaterhouseCoopers) and prior to that, 2 years with a smaller B.C. consulting firm that specialized in the mining industry. Sylvie specializes in socio-economic assessments, and much of her 26 years of experience working in BC has been focused on the forest sector. She has conducted many studies that have involved the development and use of timber harvesting and processing employment coefficients.

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Executive Summary

This report provides forest industry direct employment coefficients associated with harvesting and processing timber from the Central Kootenay region of BC. The coefficients are based on a survey of forest licensees in the area and timber harvest data from the BC Ministry of Forests and Range (MOFR). Similar studies have been conducted for various regions of Coastal BC and the Prince George region. For the purpose of this study, the Central Kootenay (CK) region includes the Arrow Timber Supply Area (TSA), the Kootenay Lake TSA, the Revelstoke TSA and the Golden TSA. The region also includes any Timber Forest Licences (TFLs) that are within or adjacent to those TSA boundaries, namely TFLs 3, 23, 55 and 56.

Summary Of Findings

Survey data cover an annual timber harvest of 2.04 million m³, or an estimated 68% of the total harvest volume for the Central Kootenay region over the three years under study, namely 2005, 2006 and 2007. This is based on timber harvest data provided by the companies that participated in the survey and the total harvest for the Central Kootenay region as reported by MOFR.

Central Kootenay Region Study Results	3 Year Average (2005 - 2007)	
	Total Region	Survey Results
Total Timber Harvest (m ³)	2,993,626	2,042,675
Exports % (based on survey)	0.0%	0.0%
Timber Volume Processed in B.C. (m ³)	2,993,626	2,042,675
BC Direct Employment	PY of Employment - Total Region Harvest	Employment Coefficients - PY per 1,000 m ³
Harvesting and Silviculture (3 year average from survey)		
Harvesting/ Felling	558	0.187
Planning & Administration	218	0.073
Log Hauling / Trucking	204	0.069
Barging / Towing	41	0.014
Road Building	197	0.067
Silviculture	205	0.069
Other	<u>14</u>	<u>0.004</u>
Total	1,436	0.483
Primary Processing per m³ of Timber Harvested in Central Kootenay Region		
Wood Processing	1,775	0.593
Pulp Processing	<u>186</u>	<u>0.062</u>
Sub-Total	1,960	0.655
Total Harvesting & Processing	3,396	1.138

Notes:

1. This table, and others throughout this report, provide estimates of direct harvesting employment based on MOFR timber harvest data and employment coefficients per m³ of timber harvest derived from the survey data. The number of significant digits presented in these estimates implies a degree of precision that does not exist but the represented precision is retained to maintain the integrity of the data and methodology. Tables do not always add due to rounding.
2. Timber harvest estimates are based on MOFR Harvest Billing System data as well as survey data.
3. The timber harvesting and silviculture employment coefficients are derived from the survey data. The BC primary processing employment coefficients are estimated based on the MOFR data on mill capacity for 2006 and other data.
4. The employment data exclude silviculture employment generated through the MOFR Forest Investment Account and other government programs. The employment data also exclude MOFR employees, and other indirect and induced employment generated through forest industry and employee spending on goods and services.

The survey data show that timber harvesting in the Central Kootenay (CK) region generates 0.483 direct PY of harvesting and silviculture employment per 1,000 m³ of timber harvested in the region. This translates to an estimated 1,436 PY of direct timber harvesting and silviculture

employment when extrapolated to the entire timber harvest in each of the sub-regions within the Central Kootenay region.

In addition to timber harvesting and silviculture, the CK region timber harvest generates an estimated 1,960 PY of direct wood processing and primary pulp and paper manufacturing employment, bringing the total direct employment impact to 3,396 PY of employment. The following table provides an estimate of the direct employment impacts associated with the harvest within each sub-region in the study area.

Direct Employment Impacts (PY) from Central Kootenay Region Timber Harvest (Extrapolated to Total Industry)	3 Year Average - Weighted Average Based on MOFR Harvest Data				
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region	% of Total
Direct Harvesting Employment:					
Arrow TSA Region	480	67	8	555	39%
Kootenay Lake FD	24	258	0	282	20%
Columbia FD	1	0	412	414	29%
Other BC Interior	40	16	69	125	9%
Lower Mainland and Other (mainly planting crews)	36	10	14	60	4%
Total Harvesting and Silviculture	581	351	503	1,436	100%
Primary Processing:					
Primary Wood Products Processing in Central Kootenay Region	804	448	523	1,775	
Pulp Processing in Central Kootenay Region	84	47	55	186	
Sub-Total - Primary Processing	888	494	578	1,960	
Total BC Direct Impacts	1,469	846	1,081	3,396	
TIMBER HARVEST					
Total Timber Harvest (MOFR) (m3)	1,355,729	754,953	882,944	2,993,626	
% of Timber Harvest by Forest District	45%	25%	29%	100%	
Survey Coverage (Harvest Volume - m3)	905,645	466,752	670,278	2,042,675	
% of Timber Harvest by Forest District	67%	62%	76%	68%	

Source: Based on employment coefficients derived from the survey of licensees and other data, and the MOFR timber harvest by FD as reported by the MOFR Harvest Billing System.

The direct employment impacts derived from the employment coefficients and MOFR timber harvest levels show the following:

- 87% of timber harvesting employees and contractors reside in the CK region;
- 39% of the timber harvesting employees associated with the CK region timber harvest reside in the Arrow TSA region, reflecting the fact that 45% of the regional timber harvest is in that region;
- 20% reside in the Kootenay Lake FD;
- 29% reside in the Columbia FD;
- 9% reside in other BC Interior regions, usually the Okanagan-Similkameen region; and
- the balance (4%) consists mainly of silviculture planting crews who reside in the Greater Vancouver region, elsewhere in BC and in other Canadian provinces.

The study estimates that timber harvesting in the CK region generates 0.655 PY of direct manufacturing employment, or a total of 1,960 PY of manufacturing employment. The CK region includes 24 timber processing facilities including 12 lumber mills, 3 veneer/plywood plants, a Laminated Veneer Plant (LVL), 8 other types of operations (poles, posts, shakes & shingles and log home manufacturers), and a pulp mill in Castlegar. The primary wood processing mills in the CK region consumed an estimated 3.05 million m3 of fibre input in 2006/07, or 2% more than the timber harvest for the region.

1 Introduction

This report presents the results of a survey conducted to update forest industry employment coefficients for the Central Kootenay (CK) region. Similar surveys were conducted for Haida Gwaii/ Queen Charlotte Islands (HG/QCI) (2005), the Sea-to-Sky region (2006), the North and Central Coast (2006) and the Prince George TSA region (2008).

The methodology for the work was as follows:

- collect data on timber harvesting employment and harvest by management unit through a survey of timber licensees and logging contractors that operate in the CK region;
- collect Ministry of Forests and Range (MOFR) timber harvest data by management unit;
- estimate local direct harvesting employment coefficients per thousand m³ of wood harvested for each sub-region from the employment and harvest survey data (2005 through 2007 averages);
- estimate BC's primary wood and pulp and paper processing employment that results from the Central Kootenay timber harvest (based on BC MOFR Mill Capacity survey for 2006 and other data); and
- estimate the total direct employment impacts associated with the timber harvest from the Central Kootenay region based on the MOFR timber harvest data for the total region and the employment coefficients derived from the survey and other data.

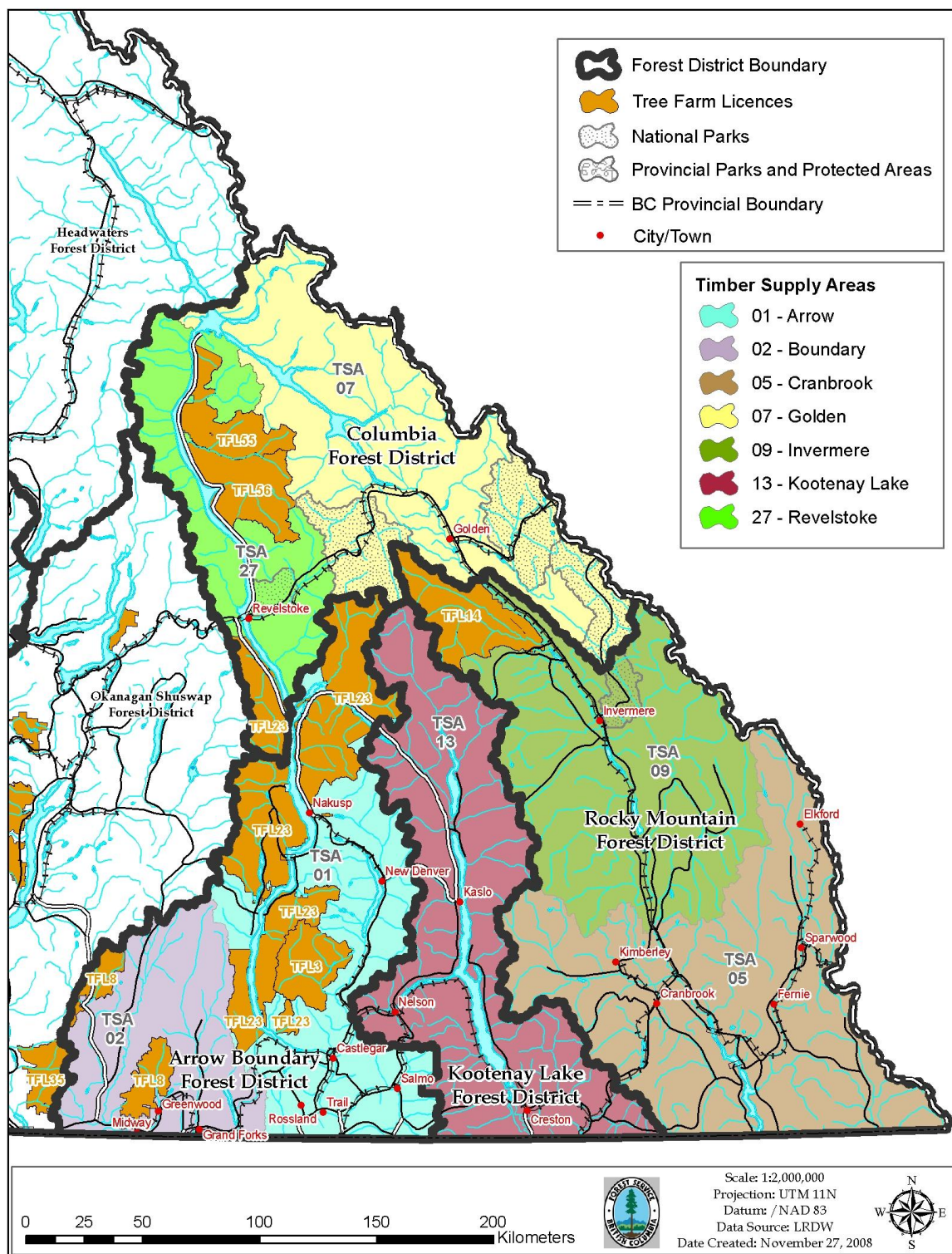
This survey considers the direct employment associated with harvesting and processing timber from the CK region. Harvesting and processing timber would also generate employment through suppliers of goods and services to the forest industry (indirect employment) and through the re-sponding effects of the direct and indirect employees (induced employment). Indirect and induced employment associated with the CK harvest is not estimated as part of this survey. MOFR employment is also excluded.

The survey results represent a mix of data obtained from licensees and their contractors, often involving some extrapolation or interpolation of data. The study results represent the best information that could be obtained within the time and monetary budget of the project, and given the cooperation of the licensees and their contractors.

For the purpose of this study, the CK region includes the Arrow Timber Supply Area (TSA), the Kootenay Lake TSA, the Revelstoke TSA and the Golden TSA. The region also includes any Timber Forest Licences (TFLs) that are within or adjacent to those TSA boundaries, namely TFLs 3, 23, 55 and 56. The Arrow TSA Region includes the Arrow TSA as well as TFL3 and TFL 23. The Arrow TSA is part of the Arrow-Boundary Forest District, but the Boundary TSA, and the TFLs within the boundaries of the Boundary TSA, are not part of this study.

The Kootenay Lake TSA forms the Kootenay Lake FD. The Columbia FD includes the Revelstoke and Golden TSAs as well as TFL 55 and TFL 56. A map of the TSAs and TFLs in the study area as well as neighbouring TSAs and TFLs is shown on the following page.

Chart 1 Map of Study Area and Neighbouring TSAs and TFLs



Source: BC Ministry of Forests and Range.

The following sections present key findings. The appendices to the report include more detail for each of the sub-regions listed above, as well as a list of key references.

2 Survey Coverage and Central Kootenay Region Licensed Volumes

The consultants surveyed each forest licensee that is named in the Ministry of Forests and Range (MOFR) 2008 timber apportionment for the CK region as well as a number of larger logging contractors. There are approximately 25 licensees that are listed in the MOFR apportionment for the four TSAs (Arrow, Kootenay Lake, Revelstoke and Golden TSAs) and the 4 TFLs within the study Area. The following list assigns those licensees in the sub-region where the majority of their harvest occurred in 2007.

Table 1 Forest Licensees Listed in MOFR Apportionment for Central Kootenay Region

Licences of More than 15,000 m3		
Arrow TSA Region	Kootenay Lake FD	Columbia FD
Atco Wood Products Ltd. (also in Kootenay Lake TSA)	Celcrest Timber Ltd. and Wynndel Box & Lumber Company Ltd.	Revelstoke Community Forest Corporation (TFL 56)
Interfor (previously owned by Pope & Talbot Ltd.) (TFL 23)	J.H. Huscroft Ltd.	Downie Street Sawmills Ltd./ Downie Timber Ltd.
Springer Creek Forest Products Ltd. (including TSA licence & TFL 3)	Kalesnikof Lumber Co. Ltd. (also in Arrow TSA)	Bell Pole Canada Inc. (also in Arrow TSA)
Tolko Industries Ltd.	Meadow Creek Cedar Ltd.	Joe Zozek Sawmills Ltd
	Tembec Industries Inc.	Louisiana-Pacific Canada Ltd. (TSA licences and TFL 55)

Licences of Less than 15,000 m3:		
Kootenay Lake FD		Columbia FD
Cooper Creek Cedar Ltd.	Lower Kootenay Development Corporation	Selkirk Forest Products Co.
Creston Valley Forest Corporation	Westwood Fibre Ltd.	469226 BC Ltd.
Goose Creek Lumber Ltd. (holds TSA licence of less than 15,000 m3 but also harvests on other licences)	Wildhorse Contracting Ltd.	Pioneer Forest Consulting Ltd.
Kaslo & District Community Forest Society (TSA licence is less than 15,000 m3 but was also awarded Community Forest Licence in April 2008 (25,000 m3))		

Note: Excludes Slocan Integrated Forestry Cooperative (20,000 m3) issued in December 2007, and Nakusp and Area Community Forest Inc. (20,000 m3) issued in March 2008, as these were recently issued and no harvest was recorded in 2007 on those licences. Source: BC MOFR Apportionment System – TSA AAC, Apportionment and Commitments, effective February 22, 2008. Appendices 1, 2 and 3 provide detail on individual licences by sub-region.

All 14 larger licensees participated in the survey, as well as 3 of the licensees with TSA licences of less than 15,000 m3. MOFR reports that 5 of the 7 smaller licensees that did not participate in the survey had no timber harvesting on their TSA licences in 2006 and 2007.

Where applicable, the 17 licensees that participated in the survey completed separate questionnaires for each management unit so that data could be compiled by FD. All but two of the licensees obtained and reported data from their contractors, but for two licensees, the consultants collected information directly from their harvesting contractors and combined the data with data received regarding licensee timber harvesting operations.

Woodlot owners and BC Timber Sales (BCTS) logging contractors that are not specifically named in the MOFR timber apportionment were not contacted to participate in the survey. These companies are typically smaller and are harder to identify and survey. Since the main objective

of the survey is to update forest industry employment coefficients expressed in terms of Person Years (PY) of employment per 1,000 m³ of timber harvested, it is not necessary to survey 100% of timber harvesting operations. Provided that harvesting employment data are collected for a reasonable proportion of the total harvest in the region and distributed across various licence types, one can be reasonably confident that the resulting employment coefficients are representative of the regional average. The survey results (and total regional harvest) are weighted towards the larger licensees, which may have more capital intensive and labour efficient operations than smaller licensees.

Survey data cover an estimated 68% of the total harvest volume over the three years under study, namely 2005, 2006 and 2007. This is based on timber harvest data by scale date provided by the companies that participated in the survey, as well as the harvest data reported in the MOFR Harvest Billing System for each of those three years.

Table 2 Estimated Survey Coverage

Survey Coverage - Central Kootenay Region (TSAs and TFLs)	2005	2006	2007	3 Year Average
Arrow TSA Region (TSA & TFLs 3 & 23)				
Survey Data	1,049,667	944,986	722,282	905,645
MOFR Data - Total Harvest	1,562,435	1,297,203	1,207,549	1,355,729
Survey Volume Coverage	67.2%	72.8%	59.8%	66.8%
Kootenay Lake FD				
Survey Data	491,521	525,266	383,470	466,752
MOFR Data - Total Harvest	760,922	803,649	700,289	754,953
Survey Volume Coverage	64.6%	65.4%	54.8%	61.8%
Revelstoke Area (TSA & TFLs 55 & 56)				
Survey Data	333,491	321,804	341,171	332,155
MOFR Data - Total Harvest	442,425	418,394	505,919	455,579
Survey Volume Coverage	75.4%	76.9%	67.4%	72.9%
Golden TSA				
Survey Data	346,406	318,972	348,989	338,122
MOFR Data - Total Harvest	430,921	366,979	484,194	427,365
Survey Volume Coverage	80.4%	86.9%	72.1%	79.1%
Columbia FD (Revelstoke & Golden)				
Survey Data	679,897	640,776	690,160	670,278
MOFR Data - Total Harvest	873,346	785,373	990,112	882,944
Survey Volume Coverage	77.8%	81.6%	69.7%	75.9%
Total Region				
Survey Data	2,221,085	2,111,028	1,795,912	2,042,675
MOFR Data - Total Harvest	3,196,703	2,886,225	2,897,950	2,993,626
Survey Volume Coverage	69.5%	73.1%	62.0%	68.2%

Notes:

1. The survey data include the timber harvest reported by licensees and their contractors and represents data by scale date for each calendar year.
2. The estimated total harvest by sub-region is based on data provided by the Ministry of Forests and Range (MOFR) Harvest Billing System (provided by Sinclair Tedder of BC MOFR, April 2, 2008). The MOFR HBS harvest data are by scale date.

The survey coverage in terms of proportion of total harvest is 68.2%. While almost all of the licence holders identified in the MOFR timber apportionment participated in the survey, those existing licence holders represent only approximately 78% of the total 2008 timber apportionment. Moreover, the private harvest in the CK region for the 3 years under study represent 9% of the total harvest reported in the MOFR HBS, for which employment data were not specifically collected, even though some of the licensees and contractors that participated in the study may be harvesting some of the private timber.

The current Allowable Annual Cut (AAC) for the four TSAs in the study area adds to 1.8 million m³.¹ The AAC for the four Tree Farm Licences (TFLs) adds another 0.95 million m³, which brings the total AAC for the region to 2.7 million m³. Approximately 22% of the AAC consists of BCTS and other licences, which are not part of existing commitments, Forest Licences, and Tree Farm Licences.

The following table summarizes the licensed volumes that comprise the Central Kootenay region AAC. The MOFR timber apportionment and information on individual licences for the study area by sub-region is provided in Appendices 1, 2 and 3.

Table 3 Central Kootenay Region Licensed Timber Volumes

Central Kootenay Region		
Forest District/ Type of Licence	Comment/ Licence Holder	2008 Allowable Annual Cut (AAC) Volume (m ³)
TSA Licences - Total Commitments per MOFR		
Arrow TSA	Includes all existing commitments listed in apportionment, effective February 2008	550,000
Kootenay Lake TSA	Includes all existing commitments listed in apportionment, effective February 2008	490,656
Revelstoke TSA	Includes all existing commitments listed in apportionment, effective February 2008	230,000
Golden TSA	Includes all existing commitments listed in apportionment, effective February 2008	485,000
Sub-Total Commitments - TSA Forest Licences		1,755,656
TREE FARM Licences (TFLs):		
TFL 3	Springer Creek Forest Products	74,100
TFL 3	BCTS and Other	5,900
TFL 23	Interfor	503,497
TFL 23	BCTS and Other	176,503
TFL 55	Louisiana-Pacific Canada	72,325
TFL 55	BCTS and Other	17,675
TFL 56	Revelstoke Community Forest Corporation	88,520
TFL 56	BCTS and Other	11,480
Sub-Total for TFLs		950,000
Total AAC - TSA Licences and TFLs		2,705,656

Source: The AAC by management unit is from the MOFR timber apportionment in effect on February 22, 2008.

3 Destination of Central Kootenay Region Timber Harvest

The timber harvest from the CK region primarily supplies manufacturing facilities in the area. None of the survey participants reported any timber volumes exported outside the country. All the licensees with manufacturing facilities reported significant trades. Most sell or trade their pullogs with Celgar, the pulp mill in Castlegar in the Arrow TSA. The majority of timber harvested within the Kootenay Lake FD and the Columbia FD is processed within that area. Timber volume harvested in the Arrow TSA is processed about evenly between mills in the Arrow TSA and mills in the Kootenay Lake FD. When survey data for the entire CK region are taken into account, 30% of the timber harvested is processed in the Arrow TSA, 36% is processed in

¹ Source: BC MOFR website, <http://www.for.gov.bc.ca/hth/apportionment/tsas.htm>

the Kootenay Lake FD, 25% is processed in the Columbia FD, and the balance, or 9% is processed in neighbouring Forest Districts.

Table 4 Survey Results on Destination of Timber Harvest from Central Kootenay Region

Central Kootenay Region Survey Results - Destination of Timber Harvest	3 Year Average (2005 - 2007)			
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region
Total Reported Harvested Volumes (m3) - Based on Survey Results	905,645	466,752	670,278	2,042,675
Harvest Volume in Each Region as a % of Total Region - Based on Survey Results	44.3%	22.9%	32.8%	100.0%
Survey Volume Coverage (Reported Volume as a % of MOFR Total Harvest Volume)	66.8%	61.8%	75.9%	68.2%
Destination of Timber Harvest for Survey Participants; % of Total Volumes Harvested:				
Export Volume	0.0%	0.0%	0.0%	0.0%
Arrow TSA Area	45.8%	22.4%	13.4%	29.9%
Kootenay Lake FD	50.1%	61.7%	0.0%	36.3%
Revelstoke TSA Region	0.9%	0.5%	27.9%	9.7%
Golden TSA Region	0.0%	0.0%	45.3%	14.9%
Boundary TSA	0.5%	0.0%	0.1%	0.3%
Okanagan-Silmikameen FD	2.4%	0.0%	12.4%	5.2%
Cranbrook and Other BC Regions	0.3%	15.4%	0.8%	3.6%
TOTAL VOLUME	100%	100%	100%	100%

Note: Destination of timber harvest is from survey results, which cover 68.2% of the Central Kootenay region timber harvest as reported by MOFR.

4 Timber Harvesting and Processing Employment Coefficients

The survey requested data on timber harvesting employment and timber harvest volumes by management unit and Forest District. In this section of the report, the survey employment data and timber harvest volumes are used to derive the harvesting and silviculture employment coefficients (PY of employment divided by m3 of reported timber harvest). This section also provides estimates of employment coefficients associated with timber processing, namely primary wood products and primary pulp manufacturing.

In the next section of the report, the coefficients are applied to the entire regional timber harvest (as indicated by the MOFR Harvest Billing System), to help derive an estimate of total direct employment impacts associated with the Central Kootenay region timber harvest.

4.1 Timber Harvesting and Silviculture Employment Coefficients

Table 5 on the following page summarizes the estimated timber harvesting and silviculture employment coefficients per 1,000 m3 of timber harvested, as derived from the survey data.

There are many factors that influence timber harvesting employment coefficients over time, in any particular year, or for any particular operation.

- The timing of the harvest within the planning cycle is a key factor affecting employment coefficients. For example, a small licensee might conduct all of the harvest planning in one year and the actual harvesting in another. Using three-year averages likely alleviates some of these timing differences, but does not likely eliminate them completely.

- Most silviculture employment related to a specific timber harvest typically occurs one or two years after the timber has been harvested. The survey participants reported contractor employment that took place in 2005, 2006 and 2007, work which may have been associated with the timber harvest of previous years.
- The percentage of timber that is harvested through conventional methods vs. cable logging or helicopter logging will affect the types of timber harvesting jobs, and may affect the number of jobs involved. The survey data show that of the total timber harvested in the Central Kootenay region, some 52% is harvested through conventional ground logging methods, approximately 46% is harvested through cable logging and 2.5% is harvested by helicopter. One licensee in the Prince George region who was contacted in the context of a similar study, reported that cable logging is approximately 25% more labour intensive than conventional logging. Cable logging is more prevalent in the Columbia FD than in other sub-regions, which coincides with the higher timber harvesting employment coefficient derived for that region from the survey results.

The percentage of timber that is harvested by helicopter is also highest in the Columbia FD at 4.5% of the timber harvested in that region. One helicopter contractor reported employment levels that were slightly lower than what was generally reported for cable logging even after adding the aircrew.

Table 5 and others throughout this report, provide estimates of direct employment coefficients per 1,000 m³ of timber harvest, derived from the survey and other data. The number of significant digits presented in these estimates implies a degree of precision that does not exist but the represented precision is retained to maintain the integrity of the data and methodology.

Table 5 *Direct Timber Harvesting Employment Coefficients for Central Kootenay Region*

Central Kootenay Region Survey Results - Person Years (PY) of Direct Harvesting Related Employment per 1,000 m ³ of Timber Harvested	3 Year Average - Person Years (PY) per 1,000 m ³				
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region	% of Total
Harvesting/ Felling	0.157	0.201	0.219	0.187	39%
Planning & Administration	0.069	0.069	0.082	0.073	15%
Log Hauling / Trucking	0.053	0.066	0.093	0.069	14%
Barging / Towing	0.025	0.000	0.007	0.014	3%
Road Building	0.060	0.050	0.088	0.067	14%
Silviculture	0.056	0.076	0.082	0.069	14%
Other	0.009	0.003	0.000	0.004	1%
Total	0.429	0.465	0.570	0.483	100%
Direct Employment by Employee Residence:					
Arrow TSA Region	0.354	0.088	0.010	0.183	38%
Kootenay Lake FD	0.017	0.342	0.000	0.101	21%
Columbia FD	0.001	0.000	0.467	0.138	29%
Other BC Interior	0.030	0.021	0.078	0.042	9%
Lower Mainland and Other (mainly planting crews)	0.027	0.014	0.016	0.020	4%
Total	0.429	0.465	0.570	0.483	100.0%

Notes:

1. The harvesting coefficients are derived from the survey of licensees operating in the Central Kootenay region and are based on the timber harvest reported by survey participants (Table 2) and the associated survey results on PY of employment (Appendices 1 to 4).
2. Timber harvesting employment includes logging, silviculture and road building operations that are directly linked to logging.

Table 5 also shows the direct timber harvesting employment per 1,000 m³ by location of employee residence. This information is calculated using the employment coefficients per 1,000

m3 of timber harvested and the survey results regarding where timber harvesting employees reside. The survey results show:

- 38% of the harvesting employees associated with the timber harvested by survey participants reside in the Arrow TSA region, which includes Castlegar, Nakusp, Trail/Rossland and the Slocan Valley;
- 21% reside in the Kootenay Lake FD, which includes Nelson, Creston, Kaslo and other neighbouring communities;
- 29% reside in the Columbia FD primarily in Revelstoke and Golden; and
- 9% reside in other BC Interior regions including the Okanagan-Similkameen area; and
- the balance, or 4% reside elsewhere in BC or other Canadian provinces, and consists primarily of planting crews that work in the CK for only a few months of the year.

The survey results on direct regional employment by employee residence represents an average which is weighted by the timber harvest in each FD by the survey participants. Slightly different results arise when the coefficients by FD are applied to the entire MOFR timber harvest.

Data on the percentage of workforce by community and by FD are shown in the survey results presented in the appendices.

4.2 Timber Processing Employment Coefficients

MOFR conducts an annual survey of mill capacity for all wood products and pulp and paper processing operations in BC.² In 2006, MOFR reported 24 wood products manufacturing operations in the Central Kootenay (CK) region. These include 12 sawmills, 3 plywood/veneer plants, one Laminated Veneer Lumber (LVL) plant, and 8 other operations including utility poles/post, shakes and shingles and log home manufacturing operations. There is also one pulp mill in Castlegar (Arrow TSA Region). A list of the operations is included in Appendix 5.

In 2007, the 24 wood products manufacturing operations in the CK region employed an estimated 2,565 people, including 2,010 employees in wood products manufacturing and 455 employees at the pulp mill in Castlegar.³ This section of the report combines MOFR data on these operations with other data to derive estimates of employment coefficients expressed in terms of Person Years (PY) of employment per 1,000 m3 of fibre input, and timber harvested from the study area.

When conducting employment impact analyses, the regional employment coefficient expressed in PY per 1,000 m3 of timber harvested in the Central Kootenay region is the relevant coefficient for each sub-region. All the timber licensees with manufacturing operations reported trading extensively with other licensees/operations throughout the Central Kootenay region and neighbouring communities. As a result, processing employment coefficients based on any single sub-region are not reflective of the employment impacts associated with timber harvesting in that sub-region. For example, the plywood and veneer plants may source peeler logs from the entire region, and so attributing their employment to only the sub-region the plants are located in would likely be misleading.

Appendix 5 provides more background data on how the employment coefficients are calculated as well as a sub-regional breakdown of some of the data.

² BC Ministry of Forests and Range, *Major Primary Timber Processing Facilities in BC 2006*, August 2008.

³ Based on MOFR and other data including discussions with licensees contacted as part of the survey.

Table 6 Timber Processing Employment Coefficients for the Central Kootenay Region

Estimated Processing Employment Coefficients for Central Kootenay Region Timber Harvest (PY per 1,000 m3) (note 1)	3 Year Average	Units	Total PYs	Units
MOFR Timber Harvest Volume (000 m3) (note 2)	2,993.6	000 m3		
Timber Volumes Processed in Wood Manufacturing Operations:				
% of Sawlogs and Other Timber Processed in Wood Manufacturing Operations	90%			
Timber Harvest Processed in Wood Manufacturing Operations	2,694.3	000 m3		
Wood Products Manufacturing Coefficient - PY per 1,000 m3 Processed into Lumber & Other Wood Products	0.659	PY per 000 m3	1,774	PY
Pulp Processing Coefficient - PYs per 1,000 m3 of Log Inputs in Wood Manufacturing Plants	0.052	PY per 000 m3	140	PY
Total Processing for Timber Processed in Wood Manufacturing Plants (PYs per 000 m3)	0.711	PY per 000 m3	1,915	PY
Timber Volumes Processed as Pulplogs:				
% of Pulplogs	10%			
Timber Harvest Processed as Pulplog	300	000 m3		
Pulp Processing Coefficient - PYs per 1,000 m3 of Log Inputs in Woodroom	0.152	PY per 000 m3	46	PY
Total Processing PYs from Timber Harvested in Central Kootenay Region			1,960	PY
Timber Processing Coefficient - PYs per 1,000 m3 of Timber Harvested (accounts for pulplogs and sawlogs)				
Wood Processing	0.593	PY per 000 m3	1,774	PY
Pulp Processing	0.062	PY per 000 m3	186	PY
Timber Processing Coefficient - Weighted Average, Pulplogs & Sawlogs (PYs per 000 timber Harvested)	0.655	PY per 000 m3	1,960	PY

Notes:

1. The 3-year average harvest is based on the MOFR Harvest Billing System (provided by Sinclair Tedder of BC MOFR (April 2, 2008)).
2. Employment at the wood manufacturing mills, as well as fibre input and mill capacity data are based on the MOFR report titled *Major Primary Timber Processing Facilities in BC, 2006*, as well as other data. Appendix 5 provides the list of manufacturing facilities in the Central Kootenay region, which were considered in estimating employment and other data from manufacturing operations.
3. Employment and other data for the Celgar operation (Mercer International) in Castlegar are based on the following:
 - Mercer International web site, 2007 Annual Report (page 13); available from: www.mercerint.com/s/celgar.asp (accessed October 18, 2008).
 - Mill Employment: InvestKootenay.com, Castlegar & Area Investment Profile, page 6, 2005; available from: www.investkootenay.com/pdf/castlegarprofile.pdfData.
4. Data for the timber processing employment coefficients assume that 10% of the timber harvest consists of pulplogs, which are processed at the woodroom in Castlegar (approximately 300,000 m3 of fibre input).
5. Appendix 5 provides more background data on how the employment coefficients were calculated.

The above employment estimates represent a 3 year average, based on the timber harvest and the mills that were in operation in 2007.

4.3 Comparisons with 1996 and 2001 Estimates of Employment Coefficients

The following table compares the 2007 employment coefficients for the Central Kootenay region derived by this study, with the employment coefficients used by MOFR as part of the socio-economic assessments conducted for the MOFR Timber Supply Reviews (TSR). These include TSR-1 conducted in the mid-1990s, TSR-2 conducted between 1999 and 2001, and TSR-3, which commenced in 2003 and is continuing.

The following table summarizes processing employment coefficient data estimated in previous

TSR studies, as well as the estimates for 2007 derived by this study.

Table 7 Timber Harvesting & Processing Employment Coefficients, 1995 to 2007

Direct Employment Coefficients for Timber Harvested in the Central Kootenay Region	Number of Person Years (PY) per 1,000 m3			
	TSR - 1 (1995)			
TSR-1 Direct Impacts Within Each Region:	Arrow TSA	Kootenay Lake TSA	Revelstoke TSA	Golden TSA
Harvesting	0.38	0.32	0.50	0.36
Silviculture	0.15	0.11	0.11	0.10
Primary Processing:				
Timber Processing Inside Region	0.37	0.35	0.44	0.52
Timber Processing Outside Region	<u>0.07</u>	<u>0.22</u>	<u>0.06</u>	<u>0.08</u>
Sub-Total - Primary Processing	0.44	0.57	0.50	0.60
Total (Harvesting, Silviculture & Processing)	0.97	1.00	1.11	1.06
TSR-2 Direct Impacts Within Each Region:	TSR-2 (1998 (Revelstoke TSA & Golden TSA), 2000 (Arrow TSA) and 2001 (Kootenay Lake TSA))			
Harvesting	0.47	0.53	0.42	0.57
Silviculture	0.04	0.09	0.06	0.12
Primary Processing:				
Timber Processing Inside Region	0.53	0.44	0.60	0.55
Timber Processing Outside Region	0.10	0.38	0.15	0.10
Sub-Total - Primary Processing	0.63	0.82	0.75	0.65
Total (Harvesting, Silviculture & Processing)	1.14	1.44	1.23	1.34
TSR-3 Direct Impacts Within Each Region:	TSR-3 (2003 (Golden TSA), 2004 (Revelstoke TSA but data based on 1998 Est.), Arrow TSA (2004))			
Harvesting	0.42	n/a	0.42	0.57
Silviculture	0.10	n/a	0.06	0.12
Timber Processing Inside Region	0.36	n/a	0.60	0.66
Timber Processing Outside Region	0.26	n/a	0.15	0.12
Sub-Total - Primary Processing	0.62	n/a	0.75	0.78
Total (Harvesting, Silviculture & Processing)	1.13	n/a	1.23	1.47

Direct Employment Coefficients for Timber Harvested in the Central Kootenay Region	Number of Person Years (PY) per 1,000 m3			
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region
Survey Results - 3 Year Average - 2005 to 2007 (note 1)				
Harvesting	0.373	0.390	0.488	0.415
Silviculture (note 2)	0.056	0.076	0.082	0.069
Primary Processing - Central Kootenay Region:				
Wood Processing	0.593	0.593	0.593	0.593
Pulp Processing	0.062	0.062	0.062	0.062
Sub-Total Processing - Central Kootenay Central Region	0.655	0.655	0.655	0.655
Total (Harvesting, Silviculture & Processing)	1.083	1.120	1.225	1.138

Notes to Table 7:

1. The 2007 survey results are based not only on data from the TSA, but also from TFLs.
2. The 2007 estimates exclude incremental silviculture carried out by licensees, which is funded by government programs such as the Forest Investment Account (FIA) Land Base Investment program. Further detail is provided in Section 7.
3. This table provides estimates of direct harvesting employment based on MOFR timber harvest data and employment coefficients per m3 of timber harvest derived from the survey data and other study results. The number of significant digits presented in these estimates implies a degree of precision that does not exist but the represented precision is retained to maintain the integrity of the data and methodology. Data may not add due to rounding.

Sources:

- TSR-1, TSR-2 and TSR-3 Coefficients: MOFR Economics and Trade Branch, available from web site: http://www.for.gov.bc.ca/HET/tsr_sea/TSR1.xls and http://www.for.gov.bc.ca/HET/tsr_sea/TSR2.xls; as well as MOFR TSR Analysis Reports for each TSA.
- 2007 estimates are based on survey data and other study results.

Table 7 shows the following:

- The timber harvesting employment coefficient of 0.42 PY per 1,000 m³ from the 2007 survey results is the same as the TSR-3 coefficients for the Arrow TSA and Revelstoke TSA, but is lower than the comparable coefficients for the Kootenay Lake TSA and Golden TSA.
- Silviculture coefficients reported in the TSR reports range between 0.06 PY per 1,000 m³ (Revelstoke TSA) and 0.12 PY per 1,000 m³ (Golden TSA), compared with the 0.0689 PY per 1,000 m³ silviculture coefficient based on the survey. The survey results exclude any incremental silviculture carried out by licensees, which is funded by the Forest Investment Account (FIA) Land Base Investment program, and this may explain some of the difference.
- The 2007 survey results also show regional differences between the Arrow/Kootenay Lake areas, and the Columbia Forest District (Revelstoke and Golden areas) with the timber harvesting and silviculture coefficients for the Arrow TSA region being the lowest at 0.429 PY per 1,000 m³ for the Arrow TSA and 0.465 PY per 1,000 m³ for the Kootenay Lake FD, compared with 0.570 PY per 1,000 m³ for the Columbia FD (Revelstoke and Golden TSAs). The timber harvesting and silviculture coefficient reported for the Golden TSA by TSR-3 is estimated at 0.69 PY per 1,000 m³, or even higher than what is reported by the survey results for the Columbia FD (the 2007 survey results cannot be split into Revelstoke and the Golden TSAs without revealing confidential data).
- The wood and pulp processing coefficients from the survey results are estimated at 0.655 PY of direct employment per 1,000 m³ of timber harvested in the CK region. This is identical to the processing coefficient estimated in TSR-3 for the Arrow region, but is lower than what is reported by MOFR for the Revelstoke and Golden regions when the full provincial impacts are considered. The MOFR results tabulated for the Timber Supply Reviews use the average provincial employment coefficients when estimating total BC impacts. The 2007 survey results focus on the mix of mills based in the Central Kootenay region so that the employment coefficients for wood processing and pulp processing may be more accurate for the study region.
- The study results do not compile individual wood processing coefficients for the Arrow TSA region, the Kootenay Lake FD and Columbia FD based on the manufacturing operations in each of those areas. Because of the extensive trades that occur between each of those regions, it would be somewhat misleading to allocate greater employment to the timber harvested in a specific area that has more labour intensive processing operations such as log home manufacturing operations or plywood/veneer mills.

5 Direct Employment Associated with Total Area Harvest

This section of the report presents an estimate of the direct employment associated with the Central Kootenay region timber harvest by applying the timber harvesting and processing employment coefficients derived in Section 4 to the total MOFR reported timber harvest for the Central Kootenay region.

The industry employment data presented in Table 8 represent an estimate of total industry employment based on the survey derived employment coefficients, and the 3-year average harvest using MOFR Harvest Billing System data by scale date for 2005 through 2007. The table

provides estimates of the direct employment impacts resulting from the total timber harvest for each sub-region, and as a result, the regional percentage of employees by area of residence is weighted by the timber harvest in each sub-region. These percentages are slightly different than the survey results, which are by definition weighted by the timber harvest reported by the survey participants.

The estimate of direct employment for the total region of 3,396 PY includes 1,436 PY in direct harvesting and silviculture and 1,960 PY in primary processing. The 24 manufacturing operations based in the Central Kootenay region generate an estimated 2,465 PY of employment, but some of that employment would depend on the timber harvest in other neighbouring TSAs, notably the Boundary TSA.

Table 8 *Estimated Direct Employment Associated with Central Kootenay Region Harvest*

Direct Employment Impacts (PY) from Central Kootenay Region Timber Harvest (Extrapolated to Total Industry)	3 Year Average - Weighted Average Based on MOFR Harvest Data				
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region	% of Total
Direct Harvesting Employment:					
Arrow TSA Region	480	67	8	555	39%
Kootenay Lake FD	24	258	0	282	20%
Columbia FD	1	0	412	414	29%
Other BC Interior	40	16	69	125	9%
Lower Mainland and Other (mainly planting crews)	36	10	14	60	4%
Total Harvesting and Silviculture	581	351	503	1,436	100%
Primary Processing:					
Primary Wood Products Processing in Central Kootenay Region	804	448	523	1,775	
Pulp Processing in Central Kootenay Region	84	47	55	186	
Sub-Total - Primary Processing	888	494	578	1,960	
Total BC Direct Impacts	1,469	846	1,081	3,396	
TIMBER HARVEST					
Total Timber Harvest (MOFR) (m3)	1,355,729	754,953	882,944	2,993,626	
% of Timber Harvest by Forest District	45%	25%	29%	100%	
Survey Coverage (Harvest Volume - m3)	905,645	466,752	670,278	2,042,675	
% of Timber Harvest by Forest District	67%	62%	76%	68%	

Notes: Table does not add due to rounding.

1. This table provides estimates of direct harvesting employment based on assumed levels of timber harvest and employment coefficients per m3 of timber harvest; the number of significant digits presented in these estimates implies a degree of precision that does not exist but the represented precision is retained to maintain the integrity of the data and methodology.
2. The data assume a job is full-time (one PY) if the work year consistently lasts 8 to 12 months per year, or at least 180 days per year. Part-time employment data were collected and converted to PY of employment using 180 days per PY.
3. Excludes secondary paper manufacturing and value added wood processing sector.
4. For the purpose of this study, the Arrow TSA region includes the Arrow TSA and the TFLs that are within the boundaries of the Arrow TSA namely, TFL 3 and TFL 23.

Source: based on study results on employment coefficients (see Tables 6 and 7 for more detail), and MOFR timber harvest for each Forest District.

6 Full-Time and Part-Time Employment

The survey of licensees requested data on the number of full-time jobs, the number of part-time jobs and the number of days per part-time job by category of timber harvesting employment. The following paragraphs explain how the survey differentiates between full-time and part-time employment, and discusses some of the factors that influence the number of jobs reported as part-time or full-time.

- The survey defines a full-time job (also referred to as Person Year (PY) of employment) as any job where employees worked more than 180 regular 8-hour days in a year.
- Where full-time contractor employees did not work 180 days, these were reported by licensees as part-time employment, and the number of days of part-time employment were converted into PY using 180 days per year.
- Full-time employees who also work on licences in other regions outside the Central Kootenay region were reported as part-time employees if they worked less than 180 days per year on the Central Kootenay region harvest.
- Special care was taken so that part-time workers who operate in different Forest Districts and management units for the same company were not counted more than once. Part-time workers who split their time between two licensees, however, could be counted two or more times. This may be particularly relevant for silviculture workers, and in particular planting crews, where part-time work seems to be the most prevalent.
- While logging contractors such as “stump to dump” contractors were included in the survey, smaller contractors such as silviculture contractors were not. As a result, licensees typically estimated silviculture jobs, usually in terms of days of part-time employment. While licensees usually have employees or local contractors conduct the site preparation, brushing, and surveying, planting is sometimes carried out over a relatively short season by crews from all over BC and other Canadian provinces.
- All major licensees who participated in the survey reported that their timber harvesting crews operate between 9 and 10 months per year. Spring break-up typically starts March 15 and continues through to the end of May, although some companies stop logging at the end of February, and others reported not logging until June 1. There are also other seasonal shutdowns due to fire and in the fall when it is too wet to log, usually near Thanksgiving to the early part of November.

The following table indicates the number of jobs associated with the PY of employment as reported in the survey. As shown on the table, on average, over the three-year period, there are an estimated 1.4 times more jobs than there are PY of employment. The table shows that on average every year, the Central Kootenay region timber harvest generates some 1,436 PY of direct harvesting employment in BC, but the number of full-time and part-time jobs may be as much as 1.4 times greater than that, at approximately 2,020 jobs.

Table 9 Estimated Number of Jobs per PY of Direct Timber Harvesting Employment

Central Kootenay Region Full Time and Part Time Jobs Per PY of Direct Employment in Timber Harvesting and Silviculture	3 Year Average			
	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total
Survey Results:				
Number of Full Time Jobs	327	194	288	809
Number of Part Time Jobs	222	188	170	580
Total Timber Harvesting Jobs	549	382	458	1,389
PY of Direct Timber Harvesting Employment	388	217	382	988
Jobs/PY of Direct Harvesting Employment	1.414	1.761	1.199	1.407
Extrapolated Data to Total Industry:				
PY of Direct Timber Harvesting Employment	581	351	503	1,436
Total Full Time & Part Time Jobs	822	619	603	2,020

Notes:

1. As noted in the text of the report, there are various factors that influence the number of jobs reported as part-time or full-time. As a result, the data by FD are not as reliable as the combined totals, as each FD has fewer survey respondents.
2. The industry estimates of full-time and part-time jobs are based on the survey results for the Central Kootenay region.

7 Factors Affecting Timber Harvesting Employment Coefficients

The survey requested data on variables that may be affecting timber harvesting employment coefficients, for example logging methods, tree species, and proportion of old growth vs. second growth timber. The survey also requested comments on incremental silviculture activities. The following paragraphs summarize the survey results.

Logging Methods: The survey requested data on the approximate proportions of total timber harvest through conventional ground logging, cable logging, and helicopter logging. The results are presented in the following table.

Table 10 Survey Results on Logging Methods and Proportion of Pine Leading Stands

Survey Results - Timber Harvesting Methods (3 Year Average)	Arrow TSA Region	Kootenay Lake FD	Columbia FD	Total Region
% Conventional Ground Logging	64.5%	59.5%	29.0%	51.7%
% Cable Logging	34.6%	37.9%	66.4%	45.8%
% Helicopter Logging	0.9%	2.6%	4.5%	2.5%
Sub-Total	100%	100%	100%	100%
Survey Results - Timber Harvesting Characteristics (3 Year Average)	24.5%	38.1%	28.2%	28.8%

The survey participants reported using conventional ground logging for an average of 52% of the regional timber harvest, with cable logging accounting for 46% and helicopter logging the remaining 2%. Cable logging is typically more labour intensive than conventional logging. Helicopter logging is typically viewed as being less labour intensive, but the one contractor that reported information on helicopter logging reported labour coefficients that were approximately 25% lower than logging contractors doing cable logging in the same area, when all employees including the aircrew were included.

Tree Species: The survey requested licensees to report on whether the timber harvested on each licence for 2007 was predominantly pine stands, spruce, hemlock cedar, or other species.

The survey participants reported that on average, pine leading stands account for 29% of the total harvest in each region, with the Arrow TSA region reporting the least amount of pine leading stands (24.5%) and the Kootenay Lake FD reporting the highest at 38.1%. Some survey participants reported that some licences have no pine leading stands, while other licences are primarily pine leading stands. Other leading species include: cedar - hemlock (between 0% and 50% depending on the licence), fir, larch, spruce-balsam and other species. The percentage of pine leading stands is significant because of the high degree of Mountain Pine Beetle infestation that currently prevails throughout the BC Interior.

Percent of Old Growth vs. Second Growth: The data collected on the percentage of “Old Growth” and “Second Growth” was inconclusive. One survey participant rightly indicated that second growth timber typically implies timber that is harvested from managed forests in areas that have been commercially harvested on an industrial scale in the past. On that basis, the timber harvest in the Central Kootenay region is not harvested from second growth forests. Much of the timber harvest, however, is from stands that are younger than 140 years old.

Additional Employment from Incremental Silviculture Activities: The survey requested licensees to indicate if they carried out additional silviculture such as fertilizing, pruning, and pre-commercial thinning in 2005, 2006 and 2007, in addition to the basic silviculture activities such as planting and brushing reported as part of the survey.

Two of the survey participants, both large licensees operating in the Columbia FD, reported minimal incremental silviculture activities, primarily pruning. All the other survey participants reported no incremental silviculture activities for 2005, 2006 and 2007. This excludes silviculture initiatives that are currently carried out under the Forest Investment Account (FIA) Land Base Investment Program (LBIP).⁴ The BC Government established the FIA in 2002 to help improve the forest asset base and support sustainable forest management practices in BC. LBIP projects are planned and delivered by licensees and administered through a third party (PricewaterhouseCoopers).

In 2006/2007, some 350 projects representing an investment of \$13.8 million were undertaken in the Southern Interior Forest Region, but this covers a much larger region than is included in this study. Employment estimates related to the FIA work are not available and as a result have been excluded from this study.

⁴ BC Ministry of Forests and Range, *Forest Investment Account (FIA). Forest Investment Account Land Base Investment Program*, 2006/07 Annual Update, 8 pages.

Appendices

The following numbered appendices provide data by Forest District and/or management unit:

Appendix 1: Arrow TSA and TFLs within the boundaries of the Arrow TSA (TFL 3: Springer Creek Forest Products Ltd. and TFL 23: Interfor (previously owned by Pope & Talbot))

Appendix 2: Kootenay Lake TSA

Appendix 3: Columbia Forest District: Revelstoke TSA and Golden TSA, as well as the TFLs within the boundaries of the Revelstoke TSA (TFL 55: Louisiana-Pacific Canada Ltd. and TFL 56: Revelstoke Community Forest).

Appendix 4: Total for Central Kootenay Region including all 4 TSAs and TFLs 3, 23, 55 and 56.

Appendix 5: Provides the list of manufacturing facilities in the Central Kootenay region which were considered in estimating employment and other data from manufacturing operations. Also included are some tables that summarize the manufacturing employment and fibre input data that were used in calculating the employment coefficients in timber processing.

Appendix 6: Provides selected references.

APPENDIX 1 ARROW TSA REGION SURVEY RESULTS

This Appendix provides data for the Arrow TSA, which includes the TSA licences and the TFLs that are within those boundaries including TFL 3 and TFL 23. The Arrow TSA is part of the Arrow-Boundary Forest District, but the Boundary TSA, and the TFLs within the boundaries of the Boundary TSA, are not part of this study.

The following tables summarize the survey results for the Arrow TSA region.

Arrow TSA Region							
Name of Licence Holder	Licence Number	Comment on AAC and Harvest Levels	Timber Harvest (m3)				2008 Allowable Annual Cut (AAC) Volume (m3)
			2005	2006	2007	3 Year Average Harvest	
TSA Licences		Data are from MOFR Harvest Billing System (HBS) and Pierce Lefebvre Consulting survey data conducted for this study					
Tolko Industries Ltd.	A20191	Timber harvest is from MOFR HBS; closely matches survey data	8,260	73,311	28,568	36,713	47,589
Springer Creek Forest Products	A20192	Timber harvest is from MOFR HBS; closely matches survey data	209,837	108,680	118,010	145,509	100,000
Atco Wood Products Ltd.	A20193	as per survey data from Atco Wood Products; MOFR HBS reports timber harvest for both Atco Wood Products and Atco Lumber Ltd., which was purchased by Atco Wood Products in January 2007.	175,253	125,239	144,728	148,407	151,627
Kalesnikoff Lumber Co. Ltd.	A20194	Timber harvest is from MOFR HBS; closely matches survey data	54,228	39,343	48,956	47,509	34,703
Bell Pole Canada Inc.	A20196	Timber harvest is from MOFR HBS; closely matches survey data	15,038	11,169	13,447	13,218	12,963
Sub-Total TSA - Forest Licences			462,616	357,742	353,709	391,356	346,882
Community Forest Agreement		Includes 2 licences: Slocan Integral Forestry Cooperative (20,000 m3) issued in December 2007, and Nakusp and Area Community Forest Inc. (20,000 m3) issued in March 2008.	0	0	0	0	40,000
Other Harvest Not Included in Above Commitments		Includes BCTS sales not included in above commitments (AAC of 157,587 m3), woodlot licence (3,000 m3), and Forest Service Reserve (2,531 m3).	153,227	143,318	272,805	189,783	163,118
Total TSA Licences		Crown timber harvest in Arrow TSA as per MOFR HBS	615,843	501,060	626,514	581,139	550,000
TREE FARM Licences (TFLs):							
Springer Creek Forest Products	TFL 3	Timber harvest is based on MOFR HBS, which closely matches the survey data; for 2007, also includes 5,042 m3 of timber harvested by Springer Creek FP in TFL 23 (per MOFR HBS)	58,946	104,202	72,338	78,495	74,100
BCTS and Other	TFL 3	MOFR HBS does not attribute any specific timber harvest to TFL 3 other than noted above	0	0	0	0	5,900
Interfor	TFL 23	Previously owned by Pope & Talbot; timber harvest data are from MOFR HBS, which for 2006 and 2007 match closely the survey data; in 2005, MOFR data are 13% higher than survey data. AAC includes Sch. A licences (15,640 m3) and Sch. B Licences (487,857 m3)	639,005	492,328	331,418	487,584	503,497
BCTS and Other	TFL 23	As per MOFR HBS includes volumes from 42876 BC Ltd. and Convergent Management Group; AAC includes 80,700 m3 for TFL BC Timber Licences, and 95,803 m3 for other licences	28,261	12,634	39,349	26,748	176,503
Other Crown Harvest Not Attributed to Above Licences		Reported by MOFR HBS as crown harvest in Columbia FD but not attributed to specific licences	23,968	27,804	19,560	23,777	
TOTAL CROWN HARVEST		based on MOFR HBS (note 1)	1,366,023	1,138,028	1,089,179	1,197,743	1,310,000
TOTAL PRIVATE HARVEST		based on MOFR HBS (note 1)	196,413	159,176	118,370	157,986	
TOTAL HARVEST		based on MOFR HBS for Arrow-Boundary Forest District	1,562,435	1,297,203	1,207,549	1,355,729	
Survey Coverage Based on Harvest (m3)			1,049,667	944,986	722,282	905,645	
Survey Harvest Volume Coverage (% of Total Harvest)			67%	73%	60%	67%	

Note:

1. MOFR HBS reports some timber harvest (crown and private), which is not specially assigned to any specific Licence in the Arrow-Boundary Forest District. Half of that harvest was allocated to the Arrow TSA region, assuming the other half would have occurred in the Boundary TSA region.

Source:

- The harvest data noted as being based on MOFR data are from the MOFR Harvest Billing System, as provided by Sinclair Tedder of MOFR (April 2008).
- All other harvest data are from the Pierce Lefebvre Consulting survey of licensees, which was conducted for this project.
- MOFR - Apportionment System - TSA AAC, *Apportionment and Commitments*, Arrow TSA, effective February 22, 2008.
- AAC for Community Forest: MOFR, *Community Forest Agreements*, April 2008; MOFR website:
<http://www.for.gov.bc.ca/hth/community/Documents/status-table-april-2008.pdf>.

Arrow TSA Region Survey Results - Timber Exports and Destination of Arrow TSA Region FD Timber Harvest	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average
Total Reported Harvested Volumes (m3)	1,049,667	944,986	722,282	905,645
Percent of Total Volumes Harvested:				
Export Volume	0.0%	0.0%	0.0%	0.0%
Arrow TSA Area	45.0%	42.9%	51.0%	45.8%
Kootenay Lake FD	52.5%	51.1%	45.3%	50.1%
Revelstoke TSA Region	0.9%	0.9%	0.8%	0.9%
Golden TSA Region	0.0%	0.0%	0.0%	0.0%
Boundary TSA	0.5%	0.5%	0.5%	0.5%
Okanagan-Silmikameen FD	0.8%	4.4%	2.3%	2.4%
Cranbrook Region	0.3%	0.3%	0.2%	0.3%
Kamloops FD	0.0%	0.0%	0.0%	0.0%
Chilliwack FD and Other	0.0%	0.0%	0.0%	0.0%
TOTAL VOLUME	100.0%	100.0%	100.0%	100.0%

Arrow TSA Region Survey Results - Harvesting Employment - Person Years (PY)	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007
Harvesting/ Falling	163	142	122
Planning & Administration	68	63	55
Log Hauling / Trucking	55	49	40
Barging / Towing	27	25	17
Road Building	58	53	52
Silviculture	57	48	46
Other	8	7	8
Total	437	388	340

Arrow TSA Region Survey Results - Full Time & Part Time Harvesting Employment	Full Time Jobs			% Residing in Arrow TSA Region
	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	
Harvesting/ Falling	158	132	117	91%
Planning & Administration	57	53	45	93%
Log Hauling / Trucking	53	41	36	89%
Barging / Towing	27	25	17	88%
Road Building	46	44	45	100%
Silviculture	23	18	20	90%
Other	8	7	8	100%

Total	372	320	288	92%
Arrow TSA Region Survey Results - Part Time Employment	Part Time Jobs			% Residing in Arrow TSA Region
	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	
Harvesting/ Falling	22	25	15	57%
Planning & Administration	21	21	21	81%
Log Hauling / Trucking	12	12	12	47%
Barging / Towing	0	0	0	0%
Road Building	28	22	20	58%
Silviculture	149	134	147	40%
Other	2	2	2	0%
Total	234	216	217	47%

Arrow TSA Region Survey Results - % of Employees by Residence Location	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average
Arrow TSA Region				
Castlegar	10%	9%	10%	10%
Rossland/Trail Area	37%	38%	33%	36%
Fruitvale/ Salmo	11%	8%	10%	9%
Nakusp	5%	5%	6%	5%
Slocan Valley	17%	18%	19%	18%
Other communities in Arrow	<u>4%</u>	<u>4%</u>	<u>5%</u>	<u>4%</u>
Sub-Total Arrow TSA Region	83%	82%	83%	83%
Kootenay Lake FD				
Nelson	1%	1%	1%	1%
Creston	1%	1%	1%	1%
Kaslo	2%	2%	2%	2%
Other Kootenay Lake FD	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Sub-Total Kootenay Lake FD	4%	4%	4%	4%
Columbia FD				
Revelstoke	0%	0%	0%	0%
Golden	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Sub-Total Columbia FD	0%	0%	0%	0%
Other BC Interior:				
Vernon	6%	6%	6%	6%
Salmon Arm & Neighbouring Communities	0%	0%	0%	0%
Kamloops	0%	0%	0%	0%
Cranbrook TSA Region	0%	0%	0%	0%
Other Kamloops/Okanagan	1%	1%	0%	1%
Sub-Total - Other BC Interior	7%	7%	7%	7%
Lower Mainland	0%	0%	0%	0%
Other (please specify):	7%	6%	6%	6%
Total	100%	100%	100%	100%

Arrow TSA Region Survey Results - Person Years (PY) of Direct Harvesting Related Employment per 1,000 m3 of Timber Harvested	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average
Harvesting/ Falling	0.155	0.150	0.168	0.157
Planning & Administration	0.065	0.067	0.077	0.069
Log Hauling / Trucking	0.053	0.052	0.055	0.053
Barging / Towing	0.026	0.026	0.024	0.025
Road Building	0.055	0.056	0.072	0.060
Silviculture	0.055	0.051	0.064	0.056
Other	0.008	0.008	0.011	0.009
Total	0.416	0.410	0.471	0.429
Direct Employment by Employee Residence				
Arrow TSA Region	0.344	0.337	0.390	0.354
Kootenay Lake FD	0.017	0.017	0.019	0.017
Columbia FD	0.001	0.001	0.001	0.001
Other BC Interior	0.027	0.029	0.034	0.030
Lower Mainland and Other (mainly planting crews)	0.027	0.026	0.027	0.027
Total	0.416	0.410	0.471	0.429

Survey Coverage	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average
Total Harvest Reported by MOF	1,562,435	1,297,203	1,207,549	1,355,729
Survey Reported Harvest	1,049,667	944,986	722,282	905,645
Survey Coverage	67%	73%	60%	67%

Direct Employment Impacts (PY) from Arrow TSA Region Timber Harvest (Extrapolated to Total Industry)	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average	3 Year Average % of Total
Direct Harvesting Employment:					
Arrow TSA Region	553	459	427	480	33%
Kootenay Lake FD	27	23	21	24	2%
Columbia FD	1	1	1	1	0%
Other BC Interior	47	39	36	40	3%
Lower Mainland and Other (mainly planting crews)	42	35	32	36	2%
Total Harvesting and Silviculture	670	556	518	581	40%
Primary Processing:					
Wood Products Processing	926	769	716	804	55%
Pulp Processing in Central Kootenay Region	97	80	75	84	6%
Sub-Total - Primary Processing	1,023	849	791	888	60%
Total BC Direct Impacts	1,693	1,406	1,308	1,469	100%

ASSUMPTIONS					
Total Timber Harvest (MOFR) (m3)	1,562,435	1,297,203	1,207,549	1,355,729	
Exports Based on Survey	0.0%	0.0%	0.0%	0.0%	
Volume Processed in BC (m3)	1,562,435	1,297,203	1,207,549	1,355,729	
BC Employment Coefficients (PY per 000 m3):					
Harvesting and Silviculture (3 Year Average from Survey)	0.429	0.429	0.429	0.429	40%
Primary Wood Products Processing in Kootenay Central region	0.593	0.593	0.593	0.593	55%
Pulp Processing in Central Kootenay Region	0.062	0.062	0.062	0.062	6%
Total - Direct Primary Impacts	1.083	1.083	1.083	1.083	100%

Survey Results - Timber Harvesting Characteristics	Arrow TSA Region 2005	Arrow TSA Region 2006	Arrow TSA Region 2007	Arrow TSA Region 3-Yr Average
% Pine Leading Stands	24.4%	24.1%	25.3%	24.5%
% Conventional Ground Logging	65.6%	65.2%	62.4%	64.5%
% Cable Logging	33.4%	34.3%	36.4%	34.6%
% Helicopter Logging	1.1%	0.5%	1.2%	0.9%
Sub-Total	100.0%	100.0%	100.0%	100.0%

APPENDIX 2 KOOTENAY LAKE FOREST DISTRICT SURVEY RESULTS

This Appendix provides data for the Kootenay Lake Forest District, which includes all Kootenay Lake TSA Licences, and other timber harvest within those boundaries.

The tables on the following pages summarize the survey results for the Kootenay Lake FD.

Kootenay Lake Forest District							
Name of Licence Holder	Licence Number	Comment on AAC and Harvest Levels	Timber Harvest (m3)				2008 Allowable Annual Cut (AAC) Volume (m3)
			2005	2006	2007	3 Year Average Harvest	
TSA Licences		Data are from MOFR Harvest Billing System (HBS) and Pierce Lefebvre Consulting survey data conducted for this study					
Tembec Industries Inc.	A20212	Timber harvest is from MOFR HBS; closely matches survey data	118,349	105,049	77,037	100,145	99,081
J.H. Huscroft Ltd.	A20213	Timber harvest is from MOFR HBS; closely matches survey data	63,469	72,223	63,301	66,331	78,644
Celcrest Timber Ltd. and Wynndel Box & Lumber Company Ltd.	A20214	Per survey data	96,753	102,015	78,522	92,430	65,461
Alco Wood Products Ltd.	A20218	Timber harvest is from MOFR HBS; closely matches survey data	16,759	57,462	27,078	33,766	20,167
Meadow Creek Cedar Ltd.	A30171	Per survey data	112,200	75,520	72,920	86,880	96,513
Kalesnikoff Lumber Company Ltd.	A30172	Per survey data	78,179	82,351	43,233	67,921	55,247
Canadian Forest Products	A30176	AAC is now 0; timber harvest as per MOFR HBS	44,762	67,563	-927	37,133	0
Goose Creek Lumber Ltd.	A56529	Annual harvest represents a 3 year average, as reported by survey; harvest includes timber harvesting on licences other than A56529	24,113	24,113	24,113	24,113	9,500
Sub-Total Forest Licences Replaceable			554,584	586,296	385,277	508,719	424,613
Creston Valley Forest Corporation	A54214 – FL – NR	as per MOFR HBS	21,277	21,380	23,793	22,150	15,000
Kaslo & District Community Forest Society	A54215 – FL – NR	as per MOFR HBS	24,157	10,995	1,722	12,291	10,000
Wildhorse Contracting Ltd.	A75462 – FL – NR	Timber harvest is from MOFR HBS; closely matches survey data	0	0	4,578	1,526	10,000
Westwood Fibre Ltd.	A79505 – FL – NR	Timber harvest is from MOFR HBS; closely matches survey data	0	0	8,545	2,848	10,000
Lower Kootenay Development Corporation	A80321 – FL – NR	as per MOFR HBS	0	0	0	0	11,043
Cooper Creek Cedar Ltd.	A61877 – FL – NR	as per MOFR HBS	1,749	0	0	583	10,000
Sub-Total Forest Licences Non-Replaceable			47,183	32,375	38,638	39,399	66,043
Sub-Total TSA - Forest Licences			601,767	618,671	423,915	548,118	490,656
Community Forest Agreement - Other		AAC for Community Forest Agreement licences add to 50,000 m3; Kaslo & District Community Forest Society was awarded licence of 25,000 m3 in April 2008; harvest on Kaslo & District Community forest licence A54215 is included above	0	0	0	0	50,000
Other Harvest Not Included in Above Commitments		Includes BCTS sales not included in above commitments (AAC of 116,160 m3), Forest Licences Non-Replaceable not included above (6,135 m3), woodlot licence (11,000 m3), and Forest Service Reserve (7,349 m3)	39,560	109,013	159,349	102,641	140,644
TOTAL CROWN HARVEST		Crown Timber in Kootenay Lake FD per MOFR HBS	641,327	727,684	583,264	650,758	681,300
TOTAL PRIVATE HARVEST		based on MOFR HBS	119,595	75,965	117,025	104,195	
TOTAL HARVEST		based on MOFR HBS	760,922	803,649	700,289	754,953	
Survey Coverage Based on Harvest (m3)			491,521	525,266	383,470	466,752	
Survey Harvest Volume Coverage (% of Total Harvest)			65%	65%	55%	62%	

Note: The community of Creston is listed as having received an Invitation to Apply for a Community Forest licence of 15,000 m3 (August 2004); as stated in MOFR, *Community Forest Agreements*, April 2008.

Source:

- The harvest data noted as being based on MOFR data are from the MOFR Harvest Billing System, as provided by Sinclair Tedder of MOFR (April 2008).
- All other harvest data are from the Pierce Lefebvre Consulting survey of licensees, which was conducted for this project.

- MOFR - Apportionment System - TSA AAC, *Apportionment and Commitments*, Kootenay Lake TSA, effective February 22, 2008.
- AAC for Community Forest: MOFR, *Community Forest Agreements*, April 2008; MOFR website:
<http://www.for.gov.bc.ca/hth/community/Documents/status-table-april-2008.pdf>.

Kootenay Lake FD Survey Results - Timber Exports And Destination of Timber Harvest from the Kootenay Lake FD	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average
Total Reported Harvested Volumes (m3)	491,521	525,266	383,470	466,752
Percent of Total Volumes Harvested:				
Export Volume	0.0%	0.0%	0.0%	0.0%
Arrow TSA Area	24.1%	20.2%	23.4%	22.4%
Kootenay Lake FD	58.9%	63.2%	63.1%	61.7%
Revelstoke TSA Region	0.5%	0.5%	0.5%	0.5%
Golden TSA Region	0.0%	0.0%	0.0%	0.0%
Boundary TSA	0.0%	0.0%	0.0%	0.0%
Okanagan-Silmikameen FD	0.0%	0.0%	0.0%	0.0%
Cranbrook Region	16.5%	16.1%	13.0%	15.4%
Kamloops FD	0.0%	0.0%	0.0%	0.0%
Chilliwack FD and Other	0.0%	0.0%	0.0%	0.0%
TOTAL VOLUME	100.0%	100.0%	100.0%	100.0%

Kootenay Lake FD Survey Results - Harvesting Employment - Person Years (PY)	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007
Harvesting/ Falling	91	105	86
Planning & Administration	34	33	31
Log Hauling / Trucking	31	31	30
Barging / Towing	0	0	0
Road Building	23	25	23
Silviculture	33	37	36
Other	1	2	1
Total	213	232	207

Kootenay Lake FD Survey Results - Full Time & Part Time Harvesting Employment	Full Time Jobs			% Residing in Kootenay Lake FD
	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	
Harvesting/ Falling	91	104	84	70.0%
Planning & Administration	28	27	24	63.6%
Log Hauling / Trucking	31	30	28	73.8%
Barging / Towing	0	0	0	0.0%
Road Building	18	19	18	84.4%
Silviculture	23	28	27	53.8%
Other	0	1	0	0.0%
Total	191	209	181	69%

Kootenay Lake FD Survey Results - Part Time Employment	Part Time Jobs			% Residing in Kootenay Lake FD
	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	
Harvesting/ Falling	3	2	18	74%
Planning & Administration	16	16	27	95%
Log Hauling / Trucking	18	15	19	98%
Barging / Towing	0	0	0	0%
Road Building	16	20	18	74%
Silviculture	115	119	123	62%
Other	8	5	7	100%
Total	176	177	212	72%

Kootenay Lake FD Survey Results - % of Employees by Residence Location	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average
Arrow TSA Region				
Castlegar	3%	4%	3%	3%
Rossland/Trail Area	0%	1%	0%	0%
Fruitvale/ Salmo	1%	5%	2%	3%
Nakusp	1%	1%	1%	1%
Slocan Valley	3%	3%	2%	2%
Other communities in Arrow	<u>9%</u>	<u>8%</u>	<u>10%</u>	<u>9%</u>
Sub-Total Arrow TSA Region	17%	22%	18%	19%
Kootenay Lake FD				
Nelson	13%	16%	19%	16%
Creston	34%	30%	29%	31%
Kaslo	11%	10%	11%	11%
Other Kootenay Lake FD	<u>18%</u>	<u>15%</u>	<u>15%</u>	<u>16%</u>
Sub-Total Kootenay Lake FD	76%	71%	74%	74%
Columbia FD				
Revelstoke	0%	0%	0%	0%
Golden	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Sub-Total Columbia FD	0%	0%	0%	0%
Other BC Interior:				
Vernon	0%	0%	0%	0%
Salmon Arm & Neighbouring Communities	0%	0%	0%	0%
Kamloops	0%	0%	0%	0%
Cranbrook TSA Region	4%	5%	5%	4%
Other Kamloops/Okanagan	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Sub-Total - Other BC Interior	4%	5%	5%	4%
Lower Mainland	1%	1%	1%	1%
Other (please specify):	3%	2%	2%	2%
Total	100%	100%	100%	100%

Kootenay Lake FD Survey Results - Person Years (PY) of Direct Harvesting Related Employment per 000 m3 of Timber Harvested	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average
Harvesting/ Falling	0.185	0.200	0.224	0.201
Planning & Administration	0.069	0.062	0.080	0.069
Log Hauling / Trucking	0.064	0.059	0.078	0.066
Barging / Towing	0.000	0.000	0.000	0.000
Road Building	0.047	0.047	0.059	0.050
Silviculture	0.067	0.070	0.095	0.076
Other	0.002	0.004	0.002	0.003
Total	0.434	0.441	0.539	0.465
Direct Employment by Employee Residence				
Arrow TSA Region	0.074	0.095	0.098	0.088
Kootenay Lake FD	0.330	0.312	0.401	0.342
Columbia FD	0.000	0.000	0.000	0.000
Other BC Interior	0.016	0.022	0.024	0.021
Lower Mainland and Other (mainly planting crews)	0.014	0.012	0.016	0.014
Total	0.434	0.441	0.539	0.465

Survey Coverage	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average
Total Harvest Reported by MOFR	760,922	803,649	700,289	754,953
Survey Reported Harvest	491,521	525,266	383,470	466,752
Survey Coverage	65%	65%	55%	62%

Direct Employment Impacts (PY) from Kootenay Lake FD Timber Harvest (Extrapolated to Total Industry)	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average	3 Year Average % of Total
Direct Harvesting Employment:					
Arrow TSA Region	67	71	62	67	8%
Kootenay Lake FD	260	275	240	258	31%
Columbia FD	0	0	0	0	0%
Other BC Interior	16	17	15	16	2%
Lower Mainland and Other (mainly planting crews)	11	11	10	10	1%
Total Harvesting and Silviculture	354	374	326	351	42%
Primary Processing:					
Wood Products Processing	451	476	415	448	53%
Pulp Processing in Central Kootenay Region	47	50	43	47	6%
Sub-Total - Primary Processing	498	526	459	494	58%
Total BC Direct Impacts	852	900	784	846	100%

ASSUMPTIONS					
Total Timber Harvest (MOFR) (m3)	760,922	803,649	700,289	754,953	
Exports Based on Survey	0.0%	0.0%	0.0%	0.0%	
Volume Processed in BC (m3)	760,922	803,649	700,289	754,953	
BC Employment Coefficients (PY per 000 m3):					
Harvesting and Silviculture (3 Year Average from Survey)	0.465	0.465	0.465	0.465	42%
Primary Wood Products Processing in Kootenay Central region	0.593	0.593	0.593	0.593	53%
Pulp Processing in Central Kootenay Region	0.062	0.062	0.062	0.062	6%
Total - Direct Primary Impacts	1.120	1.120	1.120	1.120	100%

Survey Results - Timber Harvesting Characteristics	Kootenay Lake FD 2005	Kootenay Lake FD 2006	Kootenay Lake FD 2007	Kootenay Lake FD 3 Year Average
% Pine Leading Stands	36.6%	40.0%	37.4%	38.1%
% Conventional Ground Logging	57.6%	62.4%	58.2%	59.5%
% Cable Logging	39.6%	35.3%	39.6%	37.9%
% Helicopter Logging	2.8%	2.3%	2.3%	2.6%
Sub-Total	100.0%	100.0%	100.0%	100.0%

APPENDIX 3 COLUMBIA FOREST DISTRICT SURVEY RESULTS

This Appendix provides data for the Columbia Forest District, which includes the Revelstoke TSA, Golden TSA and the TFLs that are within the Columbia FD boundaries namely TFL 55 and TFL 56.

The following tables summarize the study results for the Columbia FD.

Columbia Forest District							
Name of Licence Holder	Licence Number	Comment on AAC and Harvest Levels	Timber Harvest (m3)				2008 Allowable Annual Cut (AAC) Volume (m3)
			2005	2006	2007	3 Year Average Harvest	
Revelstoke TSA Region		Data are from MOFR Harvest Billing System (HBS) and Pierce Lefebvre Consulting survey data conducted for this study					
Revelstoke TSA Licences							
Bell Pole Canada Inc.	A 18992	Timber harvest from MOFR HBS; includes harvest for Bell Bole which is allocated to Columbia FD including timber harvest in RevelstokeTSA (#7) and in Robson Valley TSA (#17); closely matches survey data	43,095	27,461	44,180	38,245	19,290
Downie Street Sawmills Ltd.	A31102	Timber harvest is from MOFR HBS; closely matches survey data	97,538	146,902	105,432	116,624	132,152
Joe Zozek Sawmills Ltd.	A32826	Timber harvest is from MOFR HBS; closely matches survey data	14,975	11,031	2,380	9,462	25,869
Selkirk Forest Products Company	A78062	Timber harvest is from the MOFR HBS	8,146	0	0	2,715	3,524
Sub-Total Revelstoke Forest Licences Replaceable			163,754	185,394	151,992	167,047	180,835
469226 BC Ltd.	A19007	TSL, smaller than 10,000 m3, replaceable; No timber harvested according to MOFR HBS data	0	0	0	0	1,539
Sub-Total Revelstoke TSA Commitments			171,900	185,394	151,992	169,762	182,374
Other Harvest Not Included in Above Commitments		Includes BCTS sales not included in above commitments (AAC of 42,971 m3) and Forest Service Reserve (4,655 m3); harvest is the difference between sub-total Revelstoke commitments and total harvest for Revelstoke TSA based on MOFR HBS	1,032	42,471	45,811	29,771	47,626
Sub-Total Revelstoke TSA - Forest Licences		Crown Harvest in Revelstoke TSA from MOFR HBS; also includes minimal harvest from Bell Pole in Robson Valley TSA (#17) that was attributed to Columbia FD by MOFR HBS	172,932	227,865	197,803	199,533	230,000
Louisiana-Pacific Canada	TFL 55	Timber harvest is from MOFR HBS; closely matches survey data	93,655	55,445	61,538	70,213	72,325
BCTS and Other	TFL 55	Timber harvest as reported by MOFR HBS; includes Downie Timber and other; AAC includes BCTS (11,675 m3) and other (6,000 m3)	9,315	12,122	21,078	14,172	17,675
Revelstoke Community Forest Corporation	TFL 56	Timber harvest is from MOFR HBS; closely matches survey data; AAC includes Sch. A Licences (1,800) and Sch. B Licences (86,720 m3)	94,376	73,292	125,414	97,694	88,520
BCTS and Other	TFL 56	MOFR HBS reports no other timber harvest on TFL 56	0	0	0	0	11,480
BCTS and Other	TFL 23	MOFR HBS reports crown harvest on TFL 23 within the Columbia FD	43,301	18,005	77,774	46,360	
Sub-Total - TFL Licences			240,647	158,864	285,804	228,438	190,000
Other Crown Harvest Not Attributed to Above Licences		Reported by MOFR HBS as crown harvest in Revelstoke TSA but not attributed to specific licence	17,417	29,224	18,772	21,804	
Total Crown Harvest - Revelstoke Region		based on MOFR HBS	430,996	415,953	502,379	449,776	420,000
Total Private Harvest - Revelstoke Region		based on MOFR HBS	11,429	2,442	3,530	5,800	
Total Harvest - Revelstoke Region		based on MOFR HBS	442,425	418,394	505,909	455,576	

Name of Licence Holder	Licence Number	Comment on AAC and Harvest Levels	Timber Harvest (m3)				2008 Allowable Annual Cut (AAC) Volume (m3)
			2005	2006	2007	3 Year Average Harvest	
Golden TSA Licences							
Downie Timber Ltd.	A17644	Timber harvest is from MOFR HBS; closely matches survey data	78,019	991	42,202	40,404	51,315
Louisiana- Pacific Canada Ltd.	A17645	Timber harvest is from MOFR HBS; closely matches survey data	273,613	285,419	310,401	289,811	303,466
Pioneer Forest Consulting Ltd.	A75430	Forest Licence - Non-Replaceable; MOFR HBS reports no harvest on licence from 2005-2007	0	0	0	0	10,000
Sub-Total Golden TSA Commitments			351,632	286,410	352,603	330,215	364,781
Community Forest Agreement		Not yet committed	0	0	0	0	20,000
Other Harvest Not Included in Above Commitments		AAC includes BCTS sales not included in above commitments (AAC of 95,912 m3) and Forest Service Reserve (4,307 m3)	48,627	72,532	124,547	81,902	100,219
Sub-Total Golden TSA - Forest Licences		Timber Harvest is from MOFR HBS; includes crown harvest for the Golden TSA, and half the crown harvest in the Columbia FD that was not specifically allocated to individual licences (see note 1)	400,259	358,942	477,150	412,117	485,000
Yoho National Park and Town of Golden		as per MOFR HBS	19,070	4,765	4,121	9,319	
Total Private Harvest - Golden Region		based on MOFR HBS (note 1)	11,592	3,273	2,923	5,929	
Total Harvest - Golden Region			430,921	366,979	484,194	427,365	
Columbia Forest District (Revelstoke TSA, Golden TSA and TFLs)							
TOTAL HARVEST COLUMBIA FOREST DISTRICT		as per MOFRH HBS	873,346	785,373	990,102	882,940	905,000
Survey Coverage Based on Harvest (m3)			679,897	640,776	690,160	670,278	
Survey Harvest Volume Coverage (% of Total Harvest)			78%	82%	70%	76%	

Note:

- MOFR HBS allocates most of the crown and private timber harvest to specific TSA and TFL licences and TSA areas. MOFR also reports some timber harvest (crown and private), which is not specially assigned to any specific licence in the Columbia Forest District. Half of that harvest was allocated to the Revelstoke region, and the other half was assigned to the Golden region.

Source:

- The harvest data noted as being based on MOFR data are from the MOFR Harvest Billing System, as provided by Sinclair Tedder of MOFR (April 2008).
- All other harvest data are from the Pierce Lefebvre Consulting survey of licensees, which was conducted for this project.
- MOFR - Apportionment System - TSA AAC, *Apportionment and Commitments, Revelstoke TSA, Golden TSA and TFLs*, effective February 22, 2008.
- AAC for Community Forest: MOFR, *Community Forest Agreements*, April 2008; MOFR website: <http://www.for.gov.bc.ca/hth/community/Documents/status-table-april-2008.pdf>.

Columbia FD Survey Results - Timber Exports and Destination of Timber Harvest from the Columbia FD	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average
Total Reported Harvested Volumes (m3)	679,897	640,776	690,160	670,278
Percent of Total Volumes Harvested:				
Export Volume	0.0%	0.0%	0.0%	0.0%
Arrow TSA Area	13.5%	12.3%	14.5%	13.4%

Kootenay Lake FD	0.0%	0.0%	0.0%	0.0%
Revelstoke TSA Region	31.4%	25.5%	26.8%	27.9%
Golden TSA Region	41.3%	49.9%	45.0%	45.3%
Boundary TSA	0.1%	0.1%	0.2%	0.1%
Okanagan-Silmikameen FD	12.9%	11.7%	12.6%	12.4%
Cranbrook Region	0.0%	0.0%	0.0%	0.0%
Kamloops FD	0.0%	0.0%	0.0%	0.0%
Chilliwack FD and Other	0.7%	0.6%	1.0%	0.8%
TOTAL VOLUME	100.0%	100.0%	100.0%	100.0%

Columbia FD Survey Results - Harvesting Employment - Person Years (PY)	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007
Harvesting/ Falling	149	141	150
Planning & Administration	61	52	52
Log Hauling / Trucking	63	61	63
Barging / Towing	4	5	4
Road Building	65	50	62
Silviculture	60	57	47
Other	0	0	0
Total	402	367	378

Columbia FD Survey Results - Full Time & Part Time Harvesting Employment	Full Time Jobs			% Residing in Columbia FD
	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	
Harvesting/ Falling	147	140	148	86%
Planning & Administration	47	40	39	78%
Log Hauling / Trucking	38	36	37	83%
Barging / Towing	4	5	4	77%
Road Building	25	21	22	72%
Silviculture	38	41	33	51%
Other	0	0	0	0%
Total	300	283	283	78%
Columbia FD Survey Results - Part Time Employment	Part Time Jobs			% Residing in Columbia FD
	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	
Harvesting/ Falling	19	16	17	50%
Planning & Administration	23	21	22	77%
Log Hauling / Trucking	42	44	42	91%
Barging / Towing	4	4	4	50%
Road Building	41	38	49	80%
Silviculture	49	40	32	25%
Other	0	0	0	0%
Total	179	163	167	66%

Columbia FD Survey Results - % of Employees by Residence Location	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average
Arrow TSA Region				
Slocan Valley	2%	2%	1%	2%
Other communities in Arrow	<u>0%</u>	<u>0%</u>	<u>0%</u>	<u>0%</u>
Sub-Total Arrow TSA Region	2%	2%	1%	2%
Kootenay Lake FD				
Nelson	0%	0%	0%	0%
Creston	0%	0%	0%	0%
Sub-Total Kootenay Lake FD	0%	0%	0%	0%
Columbia FD				
Revelstoke	47%	45%	47%	46%
Golden	<u>33%</u>	<u>36%</u>	<u>37%</u>	<u>35%</u>
Sub-Total Columbia FD	81%	81%	84%	82%
Other BC Interior:				
Vernon	0%	0%	0%	0%
Salmon Arm & Neighbouring Communities	6%	6%	5%	6%
Kamloops	0%	0%	0%	0%
Cranbrook TSA Region	1%	1%	1%	1%
Other Kamloops/Okanagan	<u>7%</u>	<u>7%</u>	<u>6%</u>	<u>7%</u>
Sub-Total - Other BC Interior	14%	14%	13%	14%
Lower Mainland	0%	0%	0%	0%
Other (please specify):	3%	2%	2%	3%
Total	100%	100%	100%	100%

Columbia FD Survey Results - Person Years (PY) of Direct Harvesting Related Employment per 000 m3 of Timber Harvested	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average
Harvesting/ Falling	0.219	0.221	0.217	0.219
Planning & Administration	0.089	0.081	0.075	0.082
Log Hauling / Trucking	0.092	0.095	0.091	0.093
Barging / Towing	0.006	0.008	0.006	0.007
Road Building	0.095	0.079	0.090	0.088
Silviculture	0.088	0.089	0.068	0.082
Other	0.000	0.000	0.000	0.000
Total	0.591	0.573	0.547	0.570
Direct Employment by Employee Residence				
Arrow TSA Region	0.010	0.011	0.008	0.010
Kootenay Lake FD	0.000	0.000	0.000	0.000
Columbia FD	0.478	0.466	0.457	0.467
Other BC Interior	0.083	0.082	0.069	0.078
Lower Mainland and Other (mainly planting crews)	0.020	0.014	0.013	0.016
Total	0.591	0.573	0.547	0.570

Survey Coverage	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average
Total Harvest Reported by MOFR	873,346	785,373	990,112	882,944
Survey Reported Harvest	679,897	640,776	690,160	670,278
Survey Coverage	78%	82%	70%	76%

Direct Employment Impacts (PY) from Columbia FD Timber Harvest (Extrapolated to Total Industry)	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average	3 Year Average % of Total
Direct Harvesting Employment:					
Arrow TSA Region	8	8	10	8	1%
Kootenay Lake FD	0	0	0	0	0%
Columbia FD	408	367	462	412	38%
Other BC Interior	68	61	77	69	6%
Lower Mainland and Other (mainly planting crews)	14	12	15	14	1%
Total Harvesting and Silviculture	498	448	564	503	47%
Primary Processing:					
Wood Products Processing	518	466	587	523	48%
Primary Pulp and Paper in Kootenay Central Region	54	49	61	55	5%
Sub-Total - Primary Processing	572	514	648	578	53%
Total BC Direct Impacts	1,070	962	1,213	1,081	100%
ASSUMPTIONS					
Total Timber Harvest (MOFR) (m3)	873,346	785,373	990,112	882,944	
Exports Based on Survey	0.0%	0.0%	0.0%	0.0%	
Volume Processed in BC (m3)	873,346	785,373	990,112	882,944	
BC Employment Coefficients (PY per 000 m3):					
Harvesting and Silviculture (3 Year Average from Survey)	0.570	0.570	0.570	0.570	47%
Primary Wood Products Processing in Kootenay Central region	0.593	0.593	0.593	0.593	48%
Primary Pulp and Paper in Kootenay Central Region	0.062	0.062	0.062	0.062	5%
Total - Direct Primary Impacts	1.225	1.225	1.225	1.225	100%

Survey Results - Timber Harvesting Characteristics	Columbia FD 2005	Columbia FD 2006	Columbia FD 2007	Columbia FD 3 Year Average
% Pine Leading Stands	25.1%	31.4%	28.1%	28.2%
% Conventional Ground Logging	27.4%	30.6%	29.2%	29.0%
% Cable Logging	68.0%	65.0%	66.2%	66.4%
% Helicopter Logging	4.6%	4.4%	4.6%	4.5%
Sub-Total	100.0%	100.0%	100.0%	100.0%

APPENDIX 4 CENTRAL KOOTENAY REGION SURVEY RESULTS

This appendix includes the survey data for all 4 TSAs (Arrow, Kootenay Lake, Revelstoke and Golden TSAs) as well as the four TFLs within those boundaries namely, TFL 3, 23, 55 and 56.

Central Kootenay Region Survey Results - Timber Exports and Destination of Timber Harvest from the Central Kootenay Region	2005	2006	2007	3 Year Regional Average
Total Reported Harvested Volumes (m3)	2,221,085	2,111,028	1,795,912	2,042,675
Percent of Total Volumes Harvested:				
Export Volume	0.0%	0.0%	0.0%	0.0%
Arrow TSA Area	30.7%	27.9%	31.0%	29.9%
Kootenay Lake FD	37.9%	38.6%	31.7%	36.3%
Revelstoke TSA Region	10.2%	8.2%	10.7%	9.7%
Golden TSA Region	12.6%	15.1%	17.3%	14.9%
Boundary TSA	0.3%	0.3%	0.2%	0.3%
Okanagan-Silmikameen FD	4.3%	5.5%	5.7%	5.2%
Cranbrook Region	3.8%	4.1%	2.9%	3.6%
Kamloops FD	0.0%	0.0%	0.0%	0.0%
Chilliwack FD and Other	0.2%	0.2%	0.4%	0.2%
TOTAL VOLUME	100.0%	100.0%	100.0%	100.0%

Central Kootenay Region Results - Harvesting Employment - Person Years (PY)	2005	2006	2007
Harvesting/ Falling	403	388	357
Planning & Administration	163	148	138
Log Hauling / Trucking	149	141	133
Barging / Towing	31	30	21
Road Building	146	128	137
Silviculture	150	142	129
Other	9	9	9
Total	1,052	986	924

Central Kootenay Region Results - Full Time & Part Time Harvesting Employment	Full Time Jobs		
	2005	2006	2007
Harvesting/ Falling	396	376	349
Planning & Administration	132	120	108
Log Hauling / Trucking	122	107	101
Barging / Towing	31	30	21
Road Building	89	84	85
Silviculture	84	87	80
Other	8	8	8
Total	863	812	752

Central Kootenay Region Results - Part Time Employment	Part Time Jobs		
	2005	2006	2007
Harvesting/ Falling	44	43	50
Planning & Administration	60	58	70
Log Hauling / Trucking	72	71	73
Barging / Towing	4	4	4
Road Building	85	80	87
Silviculture	313	293	302
Other	10	7	9
Total	589	556	596

Central Kootenay Region Results - % of Employees by Residence Location (Part-Time Employees are Counted as PY)	2005	2006	2007	3 Year Regional Average
Arrow TSA Region				
Castlegar	5%	5%	5%	5%
Rossland/Trail Area	15%	15%	12%	14%
Fruitvale/ Salmo	5%	4%	5%	4%
Nakusp	2%	2%	2%	2%
Slocan Valley	8%	8%	8%	8%
Other communities in Arrow	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>
Sub-Total Arrow TSA Region	39%	38%	37%	38%
Kootenay Lake FD				
Nelson	4%	5%	6%	5%
Creston	8%	9%	8%	8%
Kaslo	3%	4%	4%	4%
Other Kootenay Lake FD	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>
Sub-Total Kootenay Lake FD	19%	21%	22%	21%
Columbia FD				
Revelstoke	17%	15%	16%	16%
Golden	<u>12%</u>	<u>12%</u>	<u>13%</u>	<u>12%</u>
Sub-Total Columbia FD	29%	28%	29%	29%
Other BC Interior:				
Vernon	2%	2%	2%	2%
Salmon Arm & Neighbouring Communities	2%	2%	2%	2%
Kamloops	0%	0%	0%	0%
Cranbrook TSA Region	1%	2%	2%	2%
Other Kamloops/Okanagan	<u>3%</u>	<u>3%</u>	<u>2%</u>	<u>3%</u>
Sub-Total - Other BC Interior	9%	9%	8%	9%
Lower Mainland	0%	0%	0%	0%
Other (please specify):	5%	4%	4%	4%
Total	100%	100%	100%	100%

Central Kootenay Region Results - Person Years (PY) of Direct Harvesting Related Employment per 1,000 m3 of Timber Harvested	2005	2006	2007	3 Year Regional Average
Harvesting/ Falling	0.181	0.184	0.199	0.187
Planning & Administration	0.073	0.070	0.077	0.073
Log Hauling / Trucking	0.067	0.067	0.074	0.069
Barging / Towing	0.014	0.014	0.012	0.014
Road Building	0.066	0.061	0.076	0.067
Silviculture	0.068	0.067	0.072	0.069
Other	0.004	0.004	0.005	0.004
Total	0.474	0.467	0.515	0.483
Direct Employment by Employee Residence				
Arrow TSA Region	0.183	0.178	0.189	0.183
Kootenay Lake FD	0.092	0.098	0.114	0.101
Columbia FD	0.136	0.130	0.150	0.138
Other BC Interior	0.041	0.042	0.043	0.042
Lower Mainland and Other (mainly planting crews)	0.022	0.019	0.019	0.020
Total	0.474	0.467	0.515	0.483

Survey Coverage	2005	2006	2007	3 Year Regional Average
Total Harvest Reported by MOF	3,196,703	2,886,225	2,897,950	2,993,626
Survey Reported Harvest	2,221,085	2,111,028	1,795,912	2,042,675
Survey Coverage	69%	73%	62%	68%

Direct Employment Impacts (PY) from Central Kootenay Region Timber Harvest (Extrapolated to Total Industry)	2005	2006	2007	3 Year Regional Average	3 Year Average % of Total
Direct Harvesting Employment:					
Arrow TSA Region	585	528	530	548	16%
Kootenay Lake FD	322	291	292	301	9%
Columbia FD	441	398	400	413	12%
Other BC Interior	134	121	121	125	4%
Lower Mainland and Other (mainly planting crews)	64	58	58	60	2%
Total Harvesting and Silviculture	1,545	1,395	1,401	1,447	42%
Primary Processing:					0%
Wood Products Processing	1,895	1,711	1,718	1,775	52%
Primary Pulp and Paper in Kootenay Central Region	198	179	180	186	5%
Sub-Total - Primary Processing	2,093	1,890	1,898	1,960	58%
Total BC Direct Impacts	3,639	3,285	3,299	3,408	100%

ASSUMPTIONS					
Total Timber Harvest (MOFR) (m3)	3,196,703	2,886,225	2,897,950	2,993,626	
Exports Based on Survey	0.0%	0.0%	0.0%	0.0%	
Volume Processed in BC (m3)	3,196,703	2,886,225	2,897,950	2,993,626	
BC Employment Coefficients (PY per 000 m3):					
Harvesting and Silviculture (3 Year Average from Survey)	0.483	0.483	0.483	0.483	42%
Primary Wood Products Processing in Kootenay Central region	0.593	0.593	0.593	0.593	52%
Primary Pulp and Paper in Kootenay Central Region	0.062	0.062	0.062	0.062	5%
Total - Direct Primary Impacts	1.138	1.138	1.138	1.138	100%

Survey Results - Timber Harvesting Characteristics	2005	2006	2007	3 Year Regional Average
% Pine Leading Stands	27.3%	30.2%	29.0%	28.8%
% Conventional Ground Logging	52.1%	54.0%	48.7%	51.7%
% Cable Logging	45.4%	43.9%	48.5%	45.8%
% Helicopter Logging	2.5%	2.1%	2.7%	2.5%
Sub-Total	100.0%	100.0%	100.0%	100.0%

APPENDIX 5 CENTRAL KOOTENAY REGION TIMBER PROCESSING OPERATIONS

This appendix provides background data on the timber processing operations in the Central Kootenay region that were used in calculating the Person Years (PY) of direct employment in wood products processing and pulp manufacturing that are generated from timber harvested in the Central Kootenay region. The three tables are:

- Summary data for the Central Kootenay region used in calculating employment coefficients for wood products processing and pulp manufacturing
- Detailed data by sub-region (Arrow TSA region, Kootenay Lake FD and Columbia FD); and
- List of manufacturing operations considered in the analysis.

All the timber licensees with manufacturing operations reported trading extensively with other licensees/operations throughout the Central Kootenay region and neighbouring communities. As a result, processing employment coefficients based on any single sub-region are not reflective of the employment impacts associated with timber harvesting in that sub-region. For example, the plywood and veneer plants may source peeler logs from the entire region, and so attributing the employment to only the sub-region it is located in would likely be misleading. Sub-regional coefficients are therefore included in the tables simply for illustrative purposes. When conducting employment impact analyses, the regional employment coefficient expressed in PY per 1,000 m3 of timber harvested in the Central Kootenay region is the relevant coefficient for each sub-region.

Estimated Processing Employment Coefficients for Central Kootenay Region Timber Harvest (PY per 1,000 m3) (note 1)	2005	2006	2007	3 Year Average	Units
Total - Kootenay Central Region					
MOFR Timber Harvest Volume (000 m3) (note 2)	3,196.7	2,886.2	2,897.9	2,993.6	000 m3 harvested
Lumber and Other Wood Manufacturing:					
Wood Products Manufacturing Fibre Input - 000 m3 of Log Inputs	3,048.6	3,055.1	3,055.1	3,051.9	000 m3
Employment in Wood Manufacturing (PYs of Direct Employment)	2,045.0	1,975.0	1,975.0	2,010.0	PYs
Wood Products Manufacturing Coefficient - PY per 1,000 m3 Processed into Lumber & Other Wood Products	0.671	0.646	0.646	0.659	PYs per 000 m3 of Log Input
Pulp Processing Depending on Kootenay Central Region Timber Harvest					
Estimated Chip Production from Local Mills (000 m3)	1,034.6	1,058.0	1,058.0	1,046.3	000 m3
Chip Production as a % of Fibre Input at Celgar Mill			35.3%	34.9%	
PYs at Celgar Mill that Depend on Local Mills Chip Production			160.5	158.7	000 m3 of logs
Pulp Processing Coefficient - PYs per 1,000 m3 of Log Inputs in Wood Manufacturing Plants			0.053	0.052	PYs per 000 m3 of Log Input
Total Processing for Timber Processed in Wood Manufacturing Plants (PYs per 000 m3)			0.699	0.711	PYs per 000 m3 of Log Input
Celgar Pulp Mill in Castlegar (Mercer International) (note 3)					
PYs of Direct Employment			455	455	PY
Fibre Input (000 m3 of chips and pulplogs)			3,000	3,000	000 m3
Chip Consumption as a % of Fibre Input				90%	
% of Pulplogs (Woodroom)				10%	
PYs from Pulplogs Processed at Celgar Pulp				46	
Fibre Input (000 m3) Processed in Woodroom				300	000 m3
Pulp Processing Coefficient - PYs per 1,000 m3 of Log Inputs in Woodroom				0.152	PYs per 000 m3 of Logs in Woodroom
Timber Processing Coefficient - PYs per 1,000 m3 of Timber Harvested (accounts for pulplogs and sawlogs)					
Wood Processing				0.593	
Pulp Processing				0.062	
Timber Processing Coefficient - Weighted Average, Pulplogs & Sawlogs (PYs per 000 timber Harvested)				0.655	

Notes:

1. Employment at Kootenay region wood manufacturing mills, fibre input and chip production data are based on the MOFR survey of major primary timber processing facilities and other data.
2. The harvest data noted as being based on MOFR data are from the MOFR Harvest Billing System, as provided by Sinclair Tedder of MOFR (April 2008).
3. Employment and other data for the Celgar operation (Mercer International) in Castlegar are based on the following:
 - Mercer International web site, 2007 Annual Report (page 13), and website; available from: <http://www.mercerint.com/s/celgar.asp> (accessed October 18, 2008).
 - Mill Employment: InvestKootenay.com, Castlegar & Area Investment Profile, page 6 of 15, 2005; available from: www.investkootenay.com/pdf/castlegarprofile.pdf
4. The analysis assumes that 10% of the timber harvest consists of pulplogs. On average, the survey participants reported pulplog volumes equal to 7% of the total harvest volume covered by the survey, with the average proportion of pulplogs ranging between 0% for many small licensees to 25%. Not all survey participants reported the proportion of pulplogs harvested.

Estimated Processing Employment Coefficients for Central Kootenay Region Timber Harvest (PY per 1,000 m3) (note 1)	2005	2006	2007	3 Year Average	Units
Arrow TSA Region					
MOFR Timber Harvest Volume (000 m3) (note 2)	1,562	1,297	1,208	1,356	000 m3 harvested
Lumber and Other Wood Manufacturing:					
Wood Products Manufacturing Fibre Input - 000 m3 of Log Inputs	1,463	1,634	1,634	1,549	000 m3 of Log Inputs
Employment in Wood Manufacturing (PYs of Direct Employment)	688	710	710	699	PYs
Wood Products Manufacturing Coefficient - PY per 1,000 m3 Processed into Lumber & Other Wood Products	0.470	0.434	0.434	0.451	PYs per 000 m3 of Log Input
Estimated Chip Production from Local Mills (000 m3)	563	635	635	599	000 m3 of Chips
Chip Production as a % of Fibre Input at Celgar Mill			21.2%	20.0%	
Kootenay Lake FD					
MOFR Timber Harvest Volume (000 m3) (note 2)	761	804	700	755	000 m3 harvested
Lumber and Other Wood Manufacturing:					
Wood Products Manufacturing Fibre Input - 000 m3 of Log Inputs	529.7	493.7	493.7	512	000 m3
Employment in Wood Manufacturing (PYs of Direct Employment)	559.0	530.0	530.0	545	PYs
Wood Products Manufacturing Coefficient - PY per 1,000 m3 Processed into Lumber & Other Wood Products	1.1	1.1	1.1	1.1	PYs per 000 m3 of Log Input
Estimated Chip Production from Local Mills (000 m3)	207.8	189.0	189.0	198	000 m3 of log inputs
Chip Production as a % of Fibre Input at Celgar Mill			6.3%	6.6%	
Columbia FD					
MOFR Timber Harvest Volume (000 m3) (note 2)	873	785	990	883	000 m3 harvested
Lumber and Other Wood Manufacturing:					
Wood Products Manufacturing Fibre Input - 000 m3 of Log Inputs	1,055.9	927.0	927.0	991	000 m3
Employment in Wood Manufacturing (PYs of Direct Employment)	798.0	735.0	735.0	767	PYs
Wood Products Manufacturing Coefficient - PY per 1,000 m3 Processed into Lumber & Other Wood Products	0.76	0.79	0.79	0.77	PYs per 000 m3 of Log Input
Estimated Chip Production from Local Mills (000 m3)	264.0	233.5	233.5	249	000 m3 of log inputs
Chip Production as a % of Fibre Input at Celgar Mill			7.8%	8.3%	

Note: Processing employment coefficients for any single sub-region are not reflective of the employment impacts associated with timber harvesting in that sub-region.

Please refer to previous page for the other notes to the table.

List of Primary Manufacturing Operations in Kootenay Central Region	Product	Location	FD/ TSA	Annual Capacity	
Arrow TSA Region					units
Lumber					
Kalesnikoff Lumber Co. Ltd.	Lumber	Thrums	Arrow	122	millions of board feet
Springer Creek Forest Products	Lumber	Slocan	Arrow	118	millions of board feet
Pope & Talbot Ltd.	Lumber	Castlegar	Arrow	245	millions of board feet
Jones Ties and Poles (1978) Ltd.	Lumber	Rossland	Arrow	7	millions of board feet
Herridge Trucking and Sawmilling Ltd	Lumber	Nakusp	Arrow	7	millions of board feet
Sub-Total - Lumber in Arrow Region				499	millions of board feet
Log Home and Other					
Pacific Inland Pole & Piling Ltd.	Utility Poles	Nakusp	Arrow	12	000's pieces
Box Lake Lumber Prod Ltd	Post and Rail Fencing	Nakusp	Arrow	168	000's pieces
Box Lake Lumber Prod Ltd	Shake and Shingle	Nakusp	Arrow	5	000's squares
Paterson Pole Ltd.	Utility Poles	Rossland	Arrow	29	000's pieces
Pacific Inland Pole & Piling Ltd.	Utility Poles	Nakusp	Arrow	18	000's pieces
Atco Wood Products	Veneer	Fruitvale	Arrow	108	million square feet, 3/8" basis
Kootenay Lake FD					
Lumber Mills:					
J H Huscroft Ltd.	Lumber	Erickson	KL	34	millions of board feet
Wynndel Box & Lumber Co. Ltd.	Lumber	Wynndel	KL	58	millions of board feet
Meadow Creek Cedar Ltd.	Lumber	Cooper Creek	KL	48	millions of board feet
Porcupine Wood Products Ltd.	Lumber	Salmo	KL	38	millions of board feet
Sub-Total Lumber in Kootenay Lake FD				178	millions of board feet
Other Mills:					
Hamill Creek Timberwrights	Log Homes	Meadow Creek	KL	n/a	
Remco Shake & Shingle Prod Ltd.	Shake and Shingles	Cooper Creek	KL	18	000's squares
Columbia FD					
Lumber Mills:					
Downie Timber Ltd.	Lumber	Revelstoke	Rev	107	millions of board feet
Joe Kozek Sawmills Ltd.	Lumber	Revelstoke	Rev	14	millions of board feet
Karl Beattie Cont Ltd.	Lumber	Revelstoke	Rev	5	millions of board feet
Sub-Total Lumber in Columbia FD				126	
Other Mills:					
Louisiana Pacific Canada Ltd.	LVL	Golden	Golden	n/a	
Louisiana Pacific Canada Ltd.	Veneer and Plywood	Golden	Golden	135	million square feet, 3/8" basis
Bell Pole Company	Utility Poles	Revelstoke	Rev	36	000's pieces
Louisiana Pacific Canada Ltd.	Veneer and Plywood	Golden	Golden	134	million square feet, 3/8" basis
Total Capacity for Lumber Mills in Kootenay Central Region				803	millions of board feet
Pulp and Paper Operations -					
Zellstoff Celgar Limited Partnership	Pulp Operations	Castlegar	Arrow	480	000's tonnes

Note: LVL: Laminated Veneer Lumber Operation

Source:

Based on data from the BC Ministry of Forests and Range and other sources.

BC MOFR, *Major Primary Timber Processing Facilities in BC 2006*, August 2008.

APPENDIX 6 LIST OF KEY REFERENCES

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