



**ALBERTA GRAZING LEASE
2005 IN-KIND COST
SURVEY RESULTS**

NOVEMBER 15, 2007

ALBERTA GRAZING LEASE 2005 IN-KIND COST SURVEY RESULTS

1 INTRODUCTION

Redstone Management Consulting Ltd. (Redstone) was commissioned by the Government of Alberta to conduct an independent survey of in-kind costs incurred by Alberta's farming and ranching industry in respect of their operations on grazing leases for fiscal years that ended in 2005¹. Under long-term lease agreements with the government, farmers and ranchers pay fees, graze their cattle and undertake the development and management of the grazing resource on Crown land. These lease agreements, along with the supporting Acts and Regulations, management plans and operating guidelines result in land management activities that would be the responsibility of a private owner of leased grazing lands but that the lease holder undertakes on behalf of the province. These are termed "in-kind" costs.

2 SURVEY METHODOLOGY

The survey was designed to determine the in-kind costs of holding grazing leases, and specifically to identify the "in-kind" part of the fees paid by the industry for grazing cattle on Crown lands.

The survey listed common cost categories for investments and operating expenses that are incurred by farmers and ranchers that graze cattle on grazing leases and for each category sought information on the direct and indirect costs as shown in Exhibit I (following page – the survey forms for individual and associations holding leases are found in Appendix 1 and 2 respectively). Direct costs were defined as labour, service or contract costs that could be fully attributed to an activity. Indirect costs included owner/operator, family or paid labour from the farm or ranch that were not accounted for in the direct costs and were allocated to the lease based on the proportion of farm/ranch revenue obtained from grazing cattle and the proportion of the AUMs of forage from grazing leases versus all AUMs of forage available to the farmer or rancher. The combined information provides a reasonable picture of the Alberta ranching and farming sector's in-kind grazing lease holder activities and costs.

This survey was conducted through mail, email, telephone and fax with follow-up telephone calls to clarify issues and questions that potential respondents had. Lease holders were requested to provide an accounting of expenditures by activity for "in-kind" work that they undertook as a consequence of grazing cattle on Crown land in 2005:

- **Direct operating expenditures were those annual costs that could be solely attributed to managing the lease, maintaining the grazing capacity and infrastructure, and tending the cattle.** Examples of operating expenditures required by leaseholders include rent; taxes; direct labour; supplemental feed; road, fence and corral maintenance; range maintenance; fire protection; and, the costs of managing other users of the land.
 - Rent includes amounts provided to Alberta for the use of the lands for grazing.

¹ In 2006 BearingPoint LP was originally asked to undertake this survey. In 2007 BearingPoint ceased operating in the Edmonton and northern Alberta markets and with BearingPoint's cooperation, the Redstone staff that had initiated the grazing lease holder's in-kind cost survey while at BearingPoint were able to transition the file to Redstone. This was done in a manner that allowed continuity in the process and calculations involved in completing the assignment.

- Multiple use costs referred to the time spent or cost of liaising with, managing and responding to other public users of the grazing land – for example, oil and gas interests, recreational users, hunters and others.
- **Indirect expenditures included labour that was allocated from the overall farm or ranch operations to the lease operations.** The allocation was based on:
 - First, the proportion of revenue earned from grazing cattle on all farm or ranch operations. In the case of mixed farming, this allowed separation of cattle costs from other farm costs.
 - Second, the proportion of AUMs used on Crown leased land versus all AUMs of forage available to the farmer or rancher.

To develop a labour cost per person year for farm or ranch owner operators and their families, the total of 2005 family wages and net cash farm income for Alberta beef cattle ranching and mixed farming operations reported by Statistics Canada² was used. This total per farm was divided by the average number of person years worked on the farm as reported by the individual farmers or ranchers that held leases and responded to the survey.

Exhibit I In-kind costs

Item	Direct	Indirect (allocated farm/ranch labour)	Other ¹ (farm/ranch costs not allocated)
Capital Costs	20-Year cumulative investment in: <ul style="list-style-type: none"> - Fence building/rebuilding - Range improvement - Building/corral construction - Road construction - Fire protection - Dugout development - Watering system development 		<ul style="list-style-type: none"> - Depreciation/amortization of equipment - Depreciation/amortization of building/corral costs
Annual Operating Costs	<ul style="list-style-type: none"> - Property taxes - Direct labour - Supplemental feed costs - Road maintenance - Building/corral maintenance - Fence maintenance - Range maintenance - Fire protection - Multiple use costs 	<ul style="list-style-type: none"> - Person years (including farmer/rancher time) 	<ul style="list-style-type: none"> - Repair and maintenance of buildings, corrals, equipment - Fuel costs - Utilities costs - Insurance costs - Interest costs (capital equipment, farm buildings, corrals – excluding farmland and residences)

¹ 'Other' describes operating and development costs that support farm and ranch operations, including operations on public grazing leases, but that have not been allocated as indirect in-kind grazing lease costs in this report.

² Statistics Canada 2006 Farm Financial Survey, Catalogue No. 21F0008XIE

3 PUBLIC GRAZING LEASE POPULATION AND SAMPLE CHARACTERISTICS

As summarized in Exhibit II, farmers, ranchers and grazing lease associations that operate 1,353 of the larger public land grazing leases in Alberta were contacted regarding their participation in a survey that would determine the in-kind costs incurred by the industry as part of their 2005 Crown grazing tenure costs. Two-hundred and six individuals and 21 associations responded, providing data for 360 leases and reflecting the in-kind costs associated with managing 280,333 animal unit months (AUMs) of forage capacity on 1,173,971 acres of leased Crown land. Both the sample and the response populations are representative of provincial geographic regions. The objective of this report is to review and summarize the findings.

Exhibit II Survey population, sample size and response rates

Type of Grazing Lease	Item	Number of leases	Lease area (acres)	Lease Capacity (AUMs)
Individual Leases	Population	7,852	6,492,433	1,655,950
	Sample	1,250	3,605,930	927,178
	Responses	334	822,516	196,331
Association Leases	Population	104	979,051	242,230
	Sample	103	974,416	241,071
	Responses	26	351,455	84,002
Total	Population	7,965	7,471,484	1,898,180
	Sample	1,353	4,580,346	1,168,249
	Responses	360	1,173,971	280,333

Exhibit III illustrates the scale of the average lease in each sub-population. The average size of association held leases contained in the response group is more than five times that of the average individual lease (13,518 vs. 2,463 acres). As a result, the associations have considerable economies of scale in regard to most costs.

Exhibit III Average sample grazing lease size (area and AUMs)

		Average Area (acres)	Average AUMs
Average individual lease size	Population	827	211
	Sample	2,885	742
	Responses	2,463	588
Average association lease size	Population	9,414	2,329
	Sample	9,460	2,340
	Responses	13,518	3,231

The information provided in Exhibit III shows that while the association held leases included in the response are larger than the average for the population and the sample, they are representative (for example, 13,518 vs. 9,460

acres and 3,231 vs. 2,340 AUMs respectively for the sample group). Due to the better economies of scale in the association response group we might expect that the costs reported would be conservative. In terms of size and carrying capacity, the individually held leases in the group that responded to the survey are also representative of the sample group (2,463 vs. 2,885 acres and 588 vs. 742 AUMs respectively). Consistent with the decision to limit the survey to the larger individual lease holders at the outset of the survey, the size of the average lease in the sample is larger (both in terms of acres and AUMs).

4 SUMMARY OF RESULTS

The data received from the 227 individuals and associations that held Crown land grazing leases in 2005 and responded to the survey is summarized in Exhibits IV, V and VI.

Exhibit IV shows itemized values and the total annual average of the 20-year investment costs for these lease holders. The annual costs are expressed in terms of the number of AUMs actually grazed on the leases in 2005. The total annual average of the 20-year investment cost for all types of lease holders in 2005 is \$5.93 per AUM. The itemized values and total annual average of the 20-year investment costs reported by individuals and associations are also shown. As noted above, grazing association leases are more than five times larger in area than leases held by individuals and this affects the economies of scale. Investment or capital costs for individual leaseholders are higher in most categories – notably for fence, dugout and watering system construction (\$6.79 vs. \$3.57 AUM/Year).

Exhibit IV 2005 annualized 20-year investment costs for individual and association held Crown land grazing leases

Cost Item ^{1,2}	Dollars/AUM/Year Reported By		
	Individual Leaseholders	Associations	All
Fence built or rebuilt	\$ 3.41	\$ 1.44	\$ 2.89
Range Improvement	\$ 0.91	\$ 0.59	\$ 0.82
Building/corral	\$ 0.71	\$ 0.37	\$ 0.62
Road construction	\$ 0.10	\$ 0.03	\$ 0.08
Fire protection	\$ 0.10	\$ 0.06	\$ 0.09
Dugout development	\$ 0.71	\$ 0.35	\$ 0.61
Watering system development	\$ 0.73	\$ 0.53	\$ 0.68
Other	\$ 0.12	\$ 0.20	\$ 0.14
Total	\$ 6.79	\$ 3.57	\$ 5.93

¹ Except in the case of fence costs, average annual investment costs have been determined by taking 1/20th of the 20 year total investment reported by respondents. Average annual fence building costs have been determined by multiplying the average annual miles of fence built (as reported by respondents) by an independently determined average current cost of fencing, and then deflated that amount using CPI (based on the Bank of Canada Inflation Calculator and the underlying Statistics Canada data).

² Other costs include miscellaneous equipment purchases (brush mowers, water hauling), power installations, gates and security, miscellaneous buildings, and fence line clearing.

Exhibit V shows itemized annual operating costs that individuals and associations reported for grazing leases that they held in 2005. In this Exhibit, costs are also expressed in terms of the number of AUMs actually grazed on the leases in 2005. The total annual average operating cost for all types of lease holders in 2005 is \$27.18 per AUM. Again, favourable economies of scale for the larger association grazing leases results in lower unit costs for fence, building and corral maintenance, and particularly for labour. While direct labour costs on the association leases are higher (the associations' hired staff provides almost all of the required labour), on individually held and operated leases, this is offset by the labour that is provided by the owner/operator or the family. On average, individually held leases are about 52% more expensive to operate (\$29.88 versus \$19.72/AUM per year).

Exhibit V
2005 itemized annual operating costs for individual and association held Crown land grazing leases

Cost Item	Dollars/AUM/Year Reported By		
	Individual Leaseholders	Associations	All
Allocated farm/ranch or association member labour	\$ 9.80	\$ 0.52	\$ 7.33
Direct labour	2.72	6.91	\$ 3.83
Interest expense	n/a	0.09	\$ 0.02
Utilities	n/a	0.34	\$ 0.09
Fuel	n/a	0.42	\$ 0.11
Insurance	n/a	0.49	\$ 0.13
Supplemental feed	1.58	1.30	\$ 1.51
Road maintenance	0.28	0.03	\$ 0.21
Building/corral maintenance	2.12	0.87	\$ 1.79
Fence maintenance	5.17	3.39	\$ 4.70
Fire protection	0.35	0.07	\$ 0.28
Range maintenance	0.96	1.07	\$ 0.99
Property taxes	2.37	1.80	\$ 2.22
Multiple-use	3.96	1.04	\$ 3.18
Other	0.57	1.38	\$ 0.79
Total¹	\$ 29.88	\$ 19.72	\$ 27.18

¹Other includes legal, accounting, banking, secretarial and administrative costs including office supplies; member meeting expenses; miscellaneous equipment expenses including solar and windmill power generators; cattle loss (wolves, poison weeds), watering fees; fence line brush control; fly control; fertilizing and spraying (weeds); and, wildlife damage (e.g. beaver dam removal).

Finally, Exhibit VI summarizes the total annual in-kind investment and operating costs for individual and association that held grazing leases in 2005. The total 2005 annual investment costs including grazing fees for individual and association held leases, and for all leases combined, are \$39.80, \$26.90 and \$36.37 per AUM respectively.

Exhibit VI
2005 total public land grazing costs (in-kind costs and grazing fees)

Cost Item	Dollars/AUM/Year Reported By		
	Individual Leaseholders	Associations	All
Annualized 20-year grazing lease investment costs (Exhibit III)	\$ 6.77	\$ 3.57	\$ 5.93
Annual grazing lease operating costs (Exhibit IV)	\$ 29.88	\$ 19.72	\$ 27.18
Total annual in-kind costs	\$ 36.67	\$ 23.29	\$ 33.11
Provincial grazing fees	\$ 3.13	\$ 3.61	\$ 3.26
Total public land grazing costs	\$ 39.80	\$ 26.90	\$ 36.37

5 DATA TESTING AND STATISTICAL INTERPRETATION

Reasonableness tests were performed on each individual’s or association’s submission. The tests included:

- Reviewing key line items and testing reasonableness by line item across all responses to assess consistency.
- Further follow-up with individuals or association personnel where appropriate.
- Testing the AUM total used in developing unit costs for reasonableness.

Basic statistical tests were also conducted to assess the reliability of the estimates and to further analyze the data and results. Relying on the variation of the weighted-average prices, a confidence interval was calculated at the 95 percent level. The interpretation of the confidence interval is that 95 percent of the time the true mean will lay within the calculated confidence interval for the sample mean. For the average total public land grazing costs for all leases (\$36.37 per AUM), the confidence interval is between \$31.50 and \$41.26 per AUM.

The coefficient of variation was calculated to be 7%. The coefficient of variation is a standardized or normalized form of expression that can be used to indicate the relative reliability of the estimated weighted averages presented. The coefficient of variation calculated indicates that the estimated weighted averages are a good representation of the data. Additional explanation of the tests and their meaning are provided in Exhibit VII.

Exhibit VII
Meaning and application of the statistical tests used

Test	Meaning and Application
Variation	A measure of the spread or dispersion of a set of data around an expected value in an absolute sense.
Confidence interval	An estimated range of values which is likely to include an estimated population parameter, such as a population mean, at a given probability level.
Coefficient of Variation	A measure of the spread or dispersion of a set of data as a proportion of its mean, usually expressed as a percentage.

**APPENDIX 1 – INDIVIDUAL GRAZING
LEASE SURVEY**

DRAFT



Part 1—General Background Data

In order to assist in identification, grazing lease costs must be listed by grazing lease owner and public land grazing lease number. We would ask that you keep a hard copy or other record of your response and all back-up information and data.

Note that all the data collected will be treated as confidential. Thank you in advance for your participation and input.

Leaseholder name: _____ Contact phone number: _____
Contact name: _____ Contact email address: _____

Part 2—Total Farm Information (includes owned, leased and rented areas)

This **Total Farm** Information section of the survey is used to report information and the expenses that you incurred in your farming activities in 2005. These costs will be allocated by BearingPoint to your public grazing lease(s) based on the information that you provide. In this survey, Total Farm costs are those expenditures that relate to many activities and that cannot be easily split into or identified with a single aspect of your farm. These costs may include expenses related to the overall management, coordination and operation of the farm.

(a) Total Farm Data:

Total grazing AUMs operated in 2005: _____ AUMs
Total area of farm operation in 2005: _____ Acres

(b) Total Farm data on labour and other farm costs for 2005:

Total person years* worked:	_____	Years	Interest costs (loans for capital equip. & farm buildings, corrals or other capital improvements only - exclude all farm land and residences):	_____	\$
Total repairs and maintenance (buildings, corrals, equipment, etc.):	_____	\$	Depreciation & amortization** of equipment costs:	_____	\$
Total fuel costs:	_____	\$	Depreciation & amortization** of building and corral costs:	_____	\$
Total utilities costs:	_____	\$	Insurance costs:	_____	\$
% of total farm revenue from cattle:***	_____	%			

* For example the farm owner works 12 months (full-time), a paid labourer works 12 months and a child works 6 months, the total person years worked in 2005 would equal 2.5 years.

** CCA (Capital Cost Allowance) may be used in lieu of Depreciation & Amortization.

*** If you operate an integrated feedlot operation, please provide the % of total revenue that you would have received from all cattle had you sold them prior to entering a feedlot.

Part 3—Public Land Grazing Lease Information

(a) Public grazing lease identification, capacity and proximity to your farm:

Lease number(s) (please list all leases held in 2005):	_____	Total lease area held in 2005:	_____	Acres
		Average distance that the lease(s) is (are) from the farm headquarters:	_____	KM
Total allowable AUMs under terms of lease(s):	_____	Total AUMs grazed on the lease(s) in 2005:	_____	AUM

(b) Expected weight gain over a 4 month period of a yearling grazed on public leases:

_____ lbs gain/4 mos.

(c) Of the person years spent on public land grazing leases what percent was:

Spent on cattle operations?	(i) _____ %	... what percent of the time spent on cattle operations was owner/manager time? (0-100%)	_____ %
Spent on multiple use* activities?	(ii) _____ %	... what percent of the time spent on multiple use activities was owner/manager time? (0-100%)	_____ %
	(i + ii) = 100%		

* Note that the paid and owner/manager time, and the direct costs spent on multiple use is intended to capture the additional cost that you may incur liaising with, managing and responding to the requirements of other users on the leased lands (i.e. seismic, oil & gas, recreation, hunters, etc.). This may be the time and cost of managing these interests or of mitigating their impact on your grazing lease operations.



**Part 4—Public Land Grazing Lease Investment Costs
(Costs incurred over the last 20 years and not included in Part 2)**

The "Lease Investment Costs" refer to the financial investment made in your public grazing lease(s) to make them suitable for grazing cattle. These would be investments that typically have a useful life of greater than one year and that may require some level of on going maintenance. Note that the ongoing maintenance costs are captured in Part 5 - Annual Direct Public Land Grazing Lease Operating Costs.

For leases held in 2005 (listed above), describe the investments made in improvements to your public grazing lease(s) over the past 20 years:

Total miles of fence built or rebuilt: _____ miles
 Was some or all of this custom fence construction?: Yes No

Range improvement costs:	\$ _____	Watering system development cost:	\$ _____
Building/corral costs:	\$ _____	Other costs (identify cost type):	
Road construction costs:	\$ _____	(1) _____	\$ _____
Fire protection costs:	\$ _____	(2) _____	\$ _____
Dugout development cost:	\$ _____	(3) _____	\$ _____

Part 5—2005 Annual Direct Public Land Grazing Lease Operating Costs

The costs that are incurred on an annual or near annual basis in the operation of the public grazing lease are captured in this "Annual Direct Public Land Grazing Lease Operating Costs" section of the survey. These are direct expenditures that you make each year in order to operate on your public land grazing lease(s).

Note that the paid and donated time, and direct costs spent on multiple use is intended to capture the additional cost that you may incur liaising with, managing and responding to the requirements of other users on the leased lands. This may be the time and cost of managing these interests or of mitigating their impact on your grazing lease operations.

Public lease rental payment:	\$ _____	Fire protection costs:	\$ _____
Any direct labour not included in Part 2:	\$ _____	Range maintenance (seeding & weed/brush control):	\$ _____
Supplemental feed costs:	\$ _____	Property taxes:	\$ _____
Road maintenance:	\$ _____	Multiple use costs*:	\$ _____
Building/Corral maintenance:	\$ _____	Other costs (identify cost type)	
Miles of fence maintained:	_____ miles	(1) _____	\$ _____
Was some or all of this custom fence maintenance?:	<input type="checkbox"/> Yes <input type="checkbox"/> No	(2) _____	\$ _____
		(3) _____	\$ _____

* Multiple use refers to the time spent or cost of liaising with, managing and responding to other public land users - i.e. seismic, oil & gas, recreation, hunters, etc.

Part 6—Survey Submission and Questions

Should you have any questions regarding the survey, please feel free to contact Shaun de Bruijn at (780) 429-5856. If we have any questions regarding the information you provide, we will need to contact you. Please email, fax or mail your response to BearingPoint no later than **March 23, 2007**. Complete contact information for BearingPoint in Edmonton can be found below.

Thank you for your cooperation.

BearingPoint LP
 Attention: Shaun de Bruijn
 Suite 127, Commerce Place
 10150 Jasper Avenue
 Edmonton, Alberta
 T5J 1W4

Email: shaun.debruijn@bearingpoint.com
 Office: 780.429.5856
 Fax: 780.428.5190

**APPENDIX 2 – ASSOCIATION GRAZING
LEASE SURVEY**

DRAFT

Part 1—General Background Data

In order to assist in identification, grazing lease costs must be listed by grazing lease owner and public land grazing lease number. We would ask that you keep a hard copy or other record of your response and all back-up information and data.

Note that all the data collected will be treated as confidential. Thank you in advance for your participation and input.

Leaseholder name: _____ Contact phone number: _____
 Contact name: _____ Contact email address: _____

Part 2—Public Land Grazing Lease Information

Lease number(s)
 (please list all leases held in 2005): _____

Total allowable AUMs under terms of lease(s) held in 2005: _____ AUM
 Total AUMs grazed on the lease(s) in 2005:* _____ AUM
 Total lease area: _____ Acres
 Expected weight gain over a 4 month period of a yearling grazed on public leases: _____ lbs gain/4 mos.
 Average distance that the lease(s) is (are) from the member farm headquarters: _____ KM

**If the area included deeded land, please allocate the total AUMs to the leased land based on the proportion of area.*

Part 3—Public Land Grazing Lease Investment Costs

The "Lease Investment Costs" refer to the financial investment made in your public grazing lease(s) to make them suitable for grazing cattle. These would be investments that typically have a useful life of greater than one year and that may require some level of on going maintenance. Note that the ongoing maintenance costs are captured in Part 4 - Annual Direct Public Land Grazing Lease Operating Costs.

For leases held in 2005 (listed above), describe the investments made in improvements to your public grazing lease(s) over the past 20 years:

Total miles of fence built or rebuilt: _____ miles
 Was some or all of this custom fence construction?: Yes No

Range improvement costs:	\$ _____	Watering system development cost:	\$ _____
Building/corral cost:	\$ _____	Other costs (identify cost type):	
Road construction cost:	\$ _____	(1) _____	\$ _____
Fire protection costs:	\$ _____	(2) _____	\$ _____
Dugout development cost:	\$ _____	(3) _____	\$ _____

Part 4—2005 Annual Direct Public Land Grazing Lease Operating Costs

The costs that are incurred on an annual or near annual basis in the operation of the public grazing lease are captured in this "Annual Direct Public Land Grazing Lease Operating Costs" section of the survey. These are direct expenditures that you made in the 2005 fiscal year in order to operate on your public land grazing lease(s).

Note that the paid and donated time, and direct costs spent on multiple use is intended to capture the additional cost that you may incur liaising with, managing and responding to the requirements of other users on the leased lands. This may be the time and cost of managing these interests or of mitigating their impact on your grazing lease operations.

Public lease rental payment:	\$ _____	Range maintenance (seeding & weed/brush control):	\$ _____
Donated time by association members:	_____ days	Supplemental feed costs:	\$ _____
% of donated time spent on grazing operation:	(i) _____ %	Property taxes:	\$ _____
% of donated time spent on multiple use*:	(ii) _____ %	Interest expense (loans for capital equip. & farm buildings only):	\$ _____
	<u>(i+ii) = 100%</u>		
Total paid labour & benefits:	\$ _____	Multiple use* costs:	\$ _____
% of paid labour time spent on grazing operation:	(i) _____ %	Depreciation & amortization:	\$ _____
% of paid labour time spent on multiple use*:	(ii) _____ %	Insurance costs:	\$ _____
	<u>(i+ii) = 100%</u>		
Building/Corral maintenance:	\$ _____	Other costs (identify cost type):	
Utilities:	\$ _____	(1) _____	\$ _____
Fuel:	\$ _____	(2) _____	\$ _____
Road maintenance:	\$ _____	(3) _____	\$ _____
Fire protection costs:	\$ _____	(4) _____	\$ _____
Miles of fence maintained:	_____ miles	Was some or all of this custom fence maintenance ?:	<input type="checkbox"/> Yes <input type="checkbox"/> No

* Multiple use refers to the time spent or cost of liaising with, managing and responding to other public land users - i.e. seismic, oil & gas, recreation, hunters, etc.

Part 5—Survey Submission and Questions

Should you have any questions regarding the survey, please feel free to contact Shaun de Bruijn at (780) 429-5856. If we have any questions regarding the information you provide, we will need to contact you. Please email, fax or mail your response to BearingPoint no later than **March 23, 2007**. Complete contact information for BearingPoint in Edmonton can be found below.

Thank you for your cooperation.

BearingPoint LP
Attention: Shaun de Bruijn
Suite 127, Commerce Place
10150 Jasper Avenue
Edmonton, Alberta
T5J 1W4

Email: shaun.debruijn@bearingpoint.com
Office: 780.429.5856
Fax: 780.428.5190