Shadow Populations in Northern Alberta

Part 1 - Quantification

Prepared for the Northern Alberta Development Council

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Key Findings

Key Finding 1) Alberta Municipal Affairs must authorize the inclusion of a shadow population in a municipal census. Though there are guidelines available as a matter of practice, these guidelines are not referenced in the *Municipal Government Act* nor are they noted in any of the Department's associated regulations.

Key Finding 2) As per the guidelines of Alberta Municipal Affairs, a shadow population would be considered for authorization if 10% or more of the permanent population. The quantification procedure presented in this research project resulted in 11 of the 21 rural municipalities within the boundaries of the Northern Alberta Development Council meeting the 10% or more requirement.

Key Finding 3) The top three shadow population to permanent population ratios identified in this report are located in the Municipal District of Greenview at 70.2%, the Municipal District of Opportunity at 55.4%, and Northern Sunrise County at 33.9%. The lowest shadow populations identified were located in the Municipal District of Smokey River at 2.4%, the County of Grande Prairie at 1.4%, and Birch Hills County at < 1%.

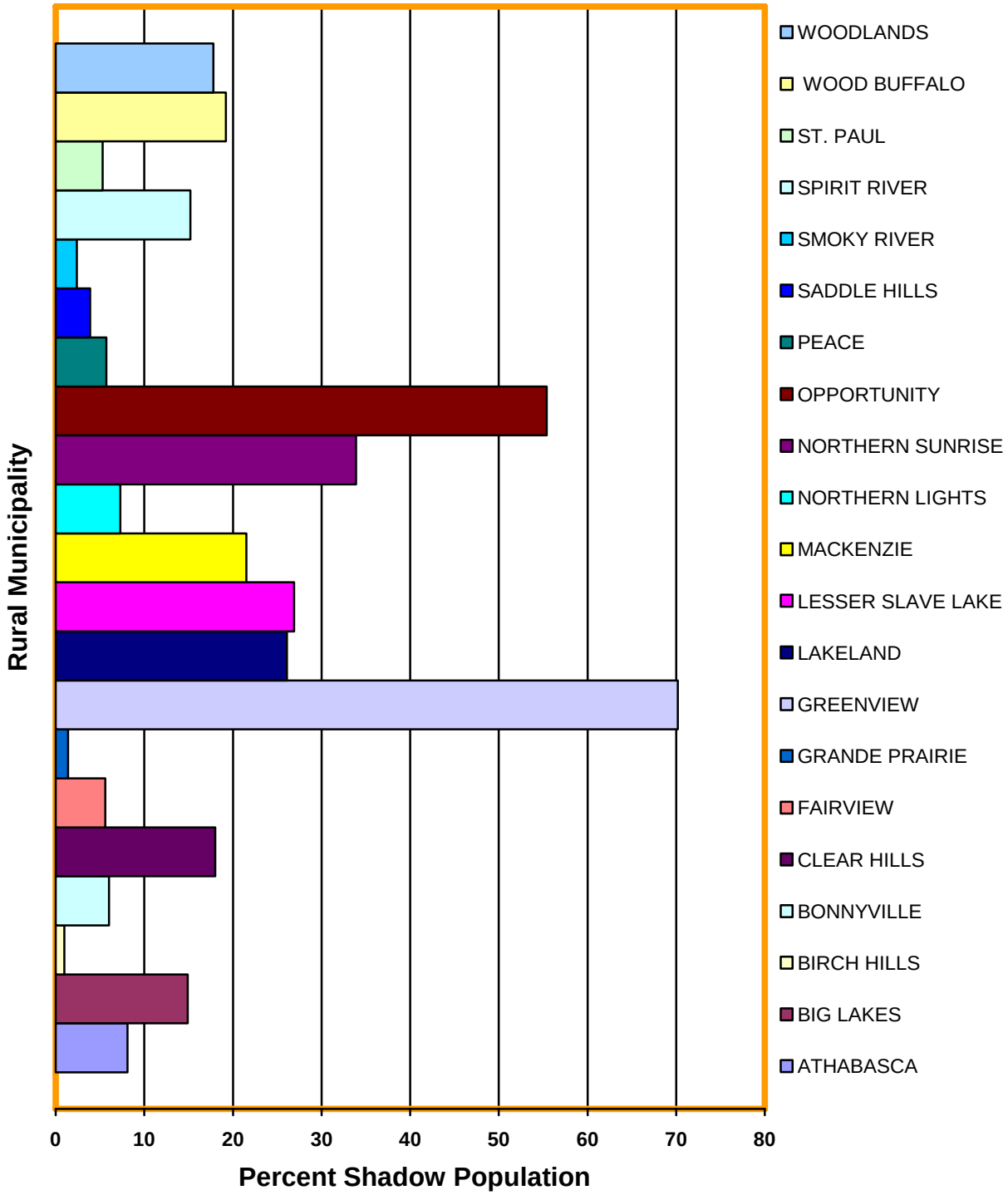
Key Finding 4) A total shadow population of 26,298 (conversion factors applied) was identified in this research project; reflecting 17.2% of the total permanent population of the rural municipalities within the boundaries of the Northern Alberta Development Council.

Key Finding 5) The summary table below shows the shadow populations calculated in this research project for each rural municipality within the boundary of the Northern Alberta Development Council. The information in this table is presented as a graphic on the next page.

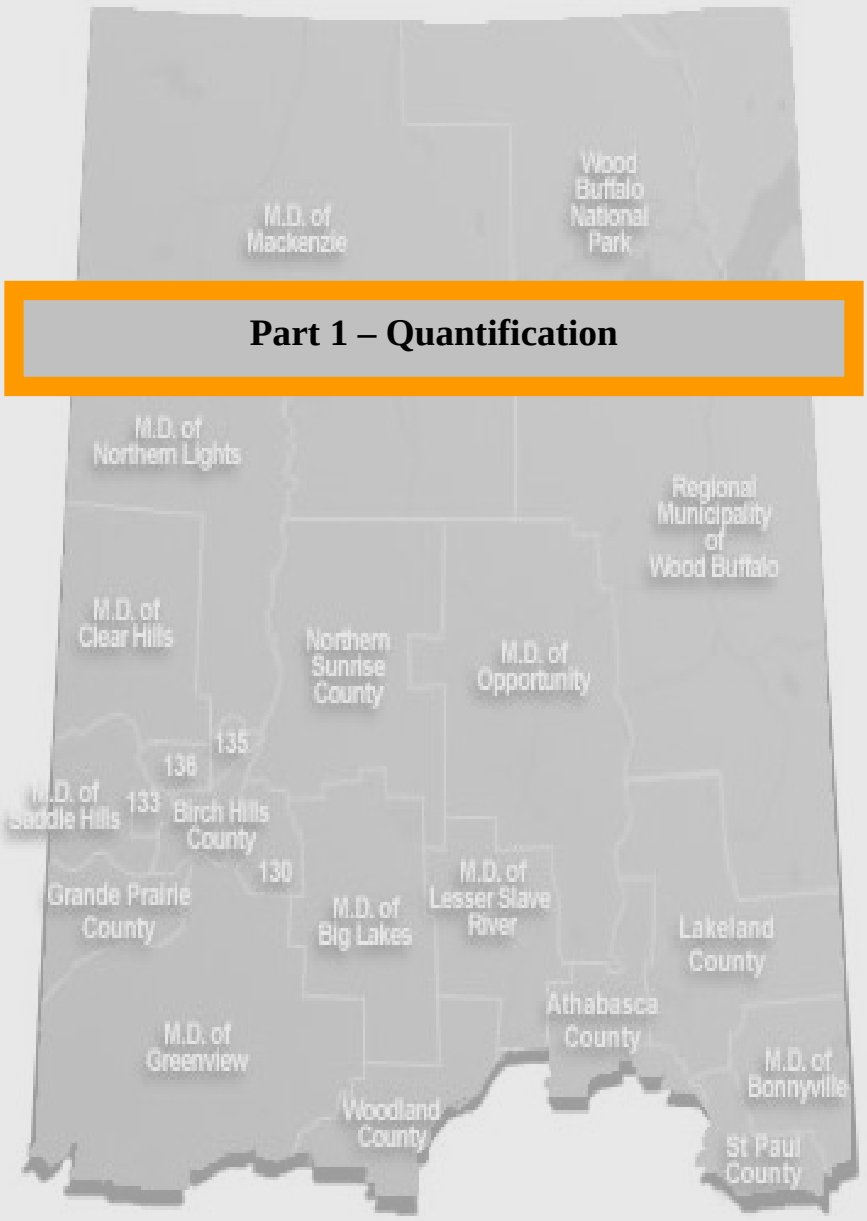
SUMMARY TABLE
Shadow Populations Quantified For Rural Municipalities in Northern Alberta

Rural Municipal District	Population 2005	Shadow Population Quantified	Percent of Population 2005	Qualify for Authorization
ATHABASCA – COUNTY NO. 12	7,521	612	8.1	NO
M.D. OF BIG LAKES	4,479	667	14.9	YES
BIRCH HILLS COUNTY	1,644	11	>1	NO
M.D. OF BONNYVILLE NO. 87	8,399	501	6.0	NO
M.D. OF CLEAR HILLS	2,772	500	18.0	YES
M.D. OF FAIRVIEW NO. 136	1,829	107	5.6	NO
GRANDE PRAIRIE COUNTY NO. 1	15,638	218	1.4	NO
M.D. OF GREENVIEW NO. 16	5,433	3816	70.2	YES
LAKELAND COUNTY	5,301	1384	26.1	YES
M.D. OF LESSER SLAVE LAKE NO. 24	2,840	765	26.9	YES
M.D. OF MACKENZIE NO. 23	9,687	2078	21.5	YES
M.D. OF NORTHERN LIGHTS NO. 22	3,663	267	7.3	NO
NORTHERN SUNRISE COUNTY	2,354	797	33.9	YES
M.D. OF OPPORTUNITY NO. 17	2,570	1423	55.4	YES
M.D. OF PEACE NO. 135	1,496	85	5.7	NO
SADDLE HILLS COUNTY	2,566	100	3.9	NO
M.D. OF SMOKY RIVER NO. 130	2,379	58	2.4	NO
M.D. SPIRIT RIVER NO. 133	824	125	15.2	YES
ST. PAUL COUNTY NO. 19	6,145	325	5.3	NO
R. M. OF WOOD BUFFALO [1]	61,397	11,779 [1]	19.2	YES
WOODLANDS COUNTY	3,818	680	17.8	YES
NADC Region – ALL Rural Municipalities	**152,755**	**26,298**	**17.2%**	

1 Shadow population authorized for 2005



Percent of Shadow Population Relative to 2005 Official Population for Rural Municipalities in Northern Alberta



Part 1 – Quantification

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1.1 RESEARCH PROJECT – OVERALL PURPOSE AND CONTEXT

Overall Purpose:

The overall purpose of this research project, which has been commissioned by the Northern Alberta Development Council, is to investigate the social impact of shadow populations in Northern Alberta. The report consists of two parts. Part 1 focuses on quantifying the shadow population in Northern Alberta using an enumeration procedure that can be replicated by local government authorities and considered in funding formulas that are per-capita based. Part 2 focuses on cross-referencing the shadow populations quantified with social indicators to determine if there is a relationship between these two variables.

Context:

Northern Alberta is one of the most resource rich locations in Alberta and in Canada. In 2006 the economic contribution of this area to the Province is projected to be $3.2 Billion, representing 14% of the total revenues for the Government of Alberta. With only 9% of the total population of the Province residing in Northern Alberta, on a per-capita basis the economic contribution of Northern Alberta far exceeds that of the rest of Alberta. In 2006 the projected contribution for Northern Alberta is $10,400 per person; a significant difference from the projected contribution for the rest of Alberta at $6,700 per person. A higher than average per-capita contribution from Northern Alberta is also evident relative to Federal revenues. Representing only 1% of the population of Canada, the economic contribution of Northern Alberta to Federal revenues is projected to be $2.7 Billion for 2006, representing 12% of the total Federal revenue collected from Alberta.

Economic prosperity in Northern Alberta comes largely from three key resource sectors – agriculture, energy, and forestry. Northern Alberta, representing 60% of the land mass of Alberta, consists of a combination of farmlands, the Boreal Forest, and large reserves of oil and gas. With each passing year the demand for the raw materials and/or value added products offered through these natural resources continues to grow both nationally and internationally. By 2008 the export value for the resources and commodities from Northern Alberta is projected be $23.8 Billion ($4.9 Billion –inter-provincial trade and $18.9 –international trade). [1]

It no surprise that such a rich resource base is utilized by numerous companies; local, provincial, national and international. These companies extract the raw materials, process, manufacture, transport, and ultimately sell the resources and commodities of Northern Alberta. Hand in hand with this economic activity is a group of workers that are imported into communities across Northern Alberta to conduct the extraction, processing, and shipping-out of the resources and commodities. These workers, non-residents who reside outside of the locale of the resource and/or commodity that brought them to the North, are often referred to as transient workers; collectively referred to as the shadow population. From gas stations, to hotels, to road-side diners people in Northern Alberta have come to know the cycle of these workers like they know their own work schedule.

Though as common as this knowledge of transient workers and production cycles may be to the residents of Northern Alberta, the shadow population is not reflected in the population counts conducted by Statistics Canada. And, aside from a few exceptions, transient workers are not included in the annual provincial census collected for/by the municipalities. Because these individuals are not included in population counts they do not contribute to the calculations of funding that is based on population; referred to as "per capita" funding. These are the kinds of funds that cover the costs of road upgrades, bridge repairs, the maintenance of water and waste-water management systems, and community services such as health and law enforcement. In Northern Alberta the responsibility of providing these services is typically charged to the municipal districts (urban and rural). A daunting task for some when one considers the amortization of usage and determinant of need is multiplied by a shadow population that is not accounted for in the bottom line dollars that are allocated on a "per capita" basis.

Hand in hand with the economic costs incurred in hosting a shadow population, is the impact a shadow population can have on a community's well-being. A shadow population, by definition, does not "own" the community. Research has indicated that a community with a high shadow population relative to the number of permanent residents is at risk for increasing social problems such as crime rates and substance abuse. One of the fundamental elements identified as being the cause of the increased risk incurred is the decrease in the "social cohesion" of the community. Social cohesion, a qualitative measurement used in assessing overall community well-being is the element of knowing ones' neighbor, whether it be direct or indirect, that

provides a sense of trust, and belongingness which residents use in assessing their personal safety, and their commitment to collective efforts to make their community a good place to live for themselves, their children, and their neighbors. Research has also indicated that the number one factor that has the greatest impact on social cohesion, especially in rural areas, is homeownership. [2] Note the conceptual contradiction when compared to the definition of a shadow population.

As a closing comment to this section, it is necessary to acknowledge that Northern Alberta needs and benefits from the flux of transient workers in the current economic boom. The intent of this research project is to validate the existence of the shadow population to ensure that services and resources available in Northern Alberta are supported to the level of usage.

1 *The Economic Contribution of Northern Alberta* (2003) – Northern Alberta Development Council

2 *Social Indicators of Cohesion* (2006 Working Copy) – Athabasca Regional Issues Working Group

1.2 PURPOSE AND APPLICATION OF RESEARCH - PART 1

Purpose

To quantify the shadow population of the rural municipalities within the boundaries of the Northern Alberta Development Council.

Application of Findings

The design of a quantification process which can be replicated by local government authorities seeking authorization to include a shadow population in their municipal census.

1.3 DEFINING A SHADOW POPULATION

There are 21 rural municipalities within the boundaries of the Northern Alberta Development Council. Transient workers are common throughout these municipalities, especially in areas such as the Municipal District of Greenview and the Regional Municipality of Wood Buffalo where there are high levels of industrial activity. The demographics of shadow populations can be a mixture of residents from other northern municipalities, other parts of Alberta, Canada, or international workers. Movement across municipal boundaries and fluctuations in numbers across any given year make the enumeration of a shadow population challenging. Yet any attempt to quantify a shadow population must be based upon credible sources of data and methods of calculation. To begin this inquiry and process, the Department of Municipal Affairs was contacted to determine the criteria and methodology required for enumerating a shadow population. Through this consultation the guidelines that follow were identified. It should be noted that the guidelines below are not defined within the *Municipal Government Act* nor are they noted in any regulations within the Ministry; they are a matter of practice and internal policy only. [3]

1) The Department of Municipal Affairs must authorize the inclusion of a shadow population in an annual municipal census. There is no formal application however the Chief Administrative Officer of the municipality is required to formally request inclusion in writing.

2) As noted in the *2005 Official Population-Municipal Census*, a person is considered to be a member of a shadow population based upon the following definition:

   "… who resides in a municipality on a seasonal basis for a given period of time but has a residence elsewhere may be counted in the shadow population."
   Examples are work camps and seasonal workers.

3) The enumeration must be conducted during the months of April–June.

4) The person must reside in the community for not less than 30 days and not more than 6 months.

5) To be considered for authorization, the shadow population must be 10% or more of the permanent population.

6) Enumeration of the shadow population is conducted annually.

The criteria noted above presents two challenges for the quantification of a shadow population in Northern Alberta. The first is the requirement that the enumeration take place during the period of April-June. Accepting only enumerations conducted during this quarter overlooks the busiest period for the majority of the industrial activity in Northern Alberta. This period is October to March. [4] The second challenge is the stipulation that an individual can only be included if this person resides within the area for not less than 30 days but not more than 6 months. This assumes enumeration of a shadow population is tracking distinct individuals. This is difficult to achieve as the majority of the individuals to be reported for a shadow population in Northern Alberta can not be accessed through the typical door-to-door census taking. Also, an individual transient worker can spend less than 30 days working in Northern Alberta but it is very likely that the company he/she works for would rotate individuals to create a constant presence of workers; especially during the peak season. Hence the impact in the North remains constant. Without an industry endorsed system identifying the location of individual employees which municipalities can access to calculate the 30 days/ 6 months criteria tracking individual transient workers is a near impossible task.

In 2005 the only municipality within the boundaries of the Northern Alberta Development Council that was authorized to include a shadow population was the Regional Municipality of Wood Buffalo (note – in this report, the authorized number for the shadow population of Wood Buffalo will be used). The shadow population was referenced in a business case for increased infrastructure dollars for Wood Buffalo. Consultation with the group that spearheaded the business case, the Athabasca Regional Issues Working Group, identified components of the research methodology used to quantify the shadow population for Wood Buffalo. These components were considered in this research project. [5] As a note, the Town of High Level received authorization to incorporate a shadow population in 2003. For 2003, the Town was authorized to include a shadow population of 415. However in 2004 the shadow population of 350 was rejected by Alberta Municipal Affairs due to insufficient numbers. Updated population numbers were not provided for the Town of High Level for the 2005 municipal census.[6]

3 Alberta Municipal Affairs - Local Government Services. Contact Lou Espino lou.espino@gov.ab.ca

4 Feedback from Industry – Research participants

5 Athabasca Regional Issues Working Group. Contact - Dianne Farkouh - Communications and Information

6 Town of High level – Contact John Crisp - Municipal Secretary (780) 926-2201 jcrisp@highlevel.ca

1.4 WHERE ARE THE NUMBERS?

If industrial activity is happening in the rural municipalities there should be a record of the approval of that activity somewhere in the labyrinth of paperwork produced through permits, licenses, and/or leases. Preliminary research for this report focused on reviewing statistics collected by Alberta Energy and Alberta Sustainable Resources Development. These two departments, often working in tandem, are key players in the issuance and monitoring of access to public land and resources in the province of Alberta.

The Government of Alberta owns 81% of the province's mineral, petroleum and natural gas rights (the remaining 19% are "freehold" rights owned by the federal government on behalf of First Nations or in National Parks, and by individuals and companies). [7]Alberta Energy is responsible for administering access to these rights through the issuance of licenses or leases, including the well licensees issued through the Energy and Utilities Board. On a yearly basis, the province holds an average of 24 land sales through tenure and issues approximately 9,000 new petroleum and natural gas agreements. The year 2005 resulted in the highest record for revenues from bids for rights - $1.827 billion. The previous record was $1.023 billion, achieved in 2004. Currently the Department of Energy administers 96,453 petroleum and natural gas agreements, 2,496 oil sands agreements, 1,180 coal agreements, 70 ammonite agreements and 1,490 metallic and industrial mineral agreements. [8]

The province's mineral, petroleum and natural gas rights are spread across 60% of Alberta's land mass; the portion of the province that is defined as crown lands. Through Alberta Sustainable Resources Development, the Public Lands and Forests Division is responsible for land use, resource exploration, and extraction/harvesting activities for renewable and non-renewable resources that are approved under the *Public Lands Act*, *Forests Act*, *Mines and Minerals Act*, *Forest Reserves Act*, and their associated regulations. This typically includes industrial (oil &

gas), timber, geophysical, commercial, agricultural and recreational activities. [9] Feedback from staff of the department indicated that access rights to crown lands for exploration activities, that are typically less than one year, can be acquired through a miscellaneous lease through Land Use Officers positioned in community offices across the province. Through this approval process Alberta Sustainable Resources Development is able to monitor local industrial activities. Collectively, all activities contribute to implementing integrated land management practices.

The statistics collected by both of the above departments is readily available through the publication of monthly updates and annual reports. These statistics can provide an overview of the amount of activity happening on the crown lands in Northern Alberta. However, feedback from both departments, including the Energy Utilities Board, indicated that the statistics collected did not capture the numbers of transient workers associated with the activity occurring.[10] Inquiry with other government departments also resulted in a similar outcome. Information on revenues, traffic volumes, or oil wells drilled is readily available. Again reflecting activity levels not numbers of transient workers.

Recall that the intended application of Part 1 of this research project is to design a quantification procedure that can be annually replicated by local government authorities. As such it serves no purpose to create a quantification model that is dependent upon research expertise, Freedom of Information and Privacy (FOIP) requests, or costly consulting. Yet, there is no one government department directly involved in the activities conducted by industry that can readily answer how many transient workers are in Northern Alberta at any given "point-in-time". And though Alberta Municipal Affairs has guidelines for the authorization of including a shadow population there is no "how to" manual to assist local governments in the collection process. Because of the challenges of tracking individuals to meet the authorization guidelines of Alberta Municipal Affairs, the approach of this report was to jump out of the labyrinth of paperwork and refocus on the purpose of Part 1 of this research project - To quantify the shadow population of the rural municipalities within the boundaries of the Northern Alberta Development Council.

To do this let's go back to the basics.

What would be the basic needs of any transient worker on any given day? Food? Water? A place to sleep? Who would provide the resources for these basic needs? Is there a record of providing these resources? These questions directed the inquiry of this research project away from the bureaucratic level and toward the individual level.

Upon evaluation of the three basic needs listed above, a place to sleep was selected as the variable that would be used to count the number of transient workers in the north. This element was selected primarily because it reflects the concrete; assuming one bed equals one person at any given point-in-time. With this focus, the next step was to answer the second question - Who provides the beds for the transient workers? And finally, the third question – Is there a record of the number of beds provided? - resulted in the identification of five sources that could provide this information. Details of these five sources are presented in the next section; Section 1.5.

7 Alberta Energy (AE) - http://www.energy.gov.ab.ca/

8 *Talk About Tenure* (January 2006). Alberta Energy (AE) – http://www.energy.gov.ab.ca/

9 Alberta Sustainable Resource Development (ASRD) - http://www.srd.gov.ab.ca/

10 ASRD – Contacts – Denis Henderson and Aniko Parnell AE – Contact – Customer Contact Centre - (403)-297-8311, EUB.Inquiries@gov.ab.ca

1.5 Baseline - Number of Beds

Data Source # 1) Industry remote camps:

Companies that provide industrial catering and camp services were identified and contacted to participate in this research project. [11] A copy of Table 1 (see pg. 25) was forwarded to the companies with a request to indicate **if**, **when**, and **how many** beds were provided in each of the listed rural municipalities during the 2005-2006 season. A noted previously in Section 1.3, the peak period for industrial camp activity in the North is October – March. Because of this, the majority of the remote camps that were set-up had already been dismantled at the time of the research request. However, there were a number of major service providers that did contribute to the report. Due to confidentially of operations, details provided by each company are not attached to this report.

Data Source # 2) Hotels/Motels:

Transient workers frequently use hotel/motel rooms available in the adjoining urban centers. To baseline the number of hotel rooms available in the north, the urban service centers (towns and villages) that are listed under each rural municipality in the *2005 Municipal Profiles* [12] were identified. The number of hotel/motel units for each urban service center was calculated using the *2005 Alberta Accommodation Guide*. [13] Because the hotel rooms in the Cities of Grande Prairie and Cold Lake can serve transient workers across a variety of the adjoining rural municipalities, these rooms were not included in the baselines prepared any of the rural municipalities. See *Appendix C* for preliminary shadow population estimates for the Cities of Grande Prairie and Cold Lake.

Data Source # 3) Public Camp Sites:

Like hotels, transient workers frequently make use of the public camp sites available, using either their own tents, fifth wheels, trucks or RV's. To baseline the number of camp sites available in the north, reference was made to the *2005 Alberta Campground Guide.* [14]

Data Source # 4) Municipal Land Use / Development Permits:

Companies that wish to conduct industrial activities, such as oil and gas exploration, should contact the applicable municipal authority that monitors the land to be used. Through the planning departments of the rural municipalities, a development permit is issued. These permits can provide information on the number of remote camps within the municipality and if on-site beds are provided. To collect this information, all rural municipalities were contacted with a request for the number of development permits issued in 2005-2006 and the number of beds recorded in the remote camps. [15]

Surprisingly, feedback from the municipalities varied. Some were aware of the industrial activity happening within their municipal boundaries (e.g. Bonnyville); some indicated not being able to collect this data (e.g. Clear Hills), while others were not only aware of the activity but were also in the process of using this information to quantify the shadow population in their boundaries (e.g. Wood Buffalo). The most frequently noted challenge for the municipalities in documenting the remote camps within their boundaries was "mobile camps". As opposed to semi-permanent industrial camps, mobile camps tend to be smaller operations (24 beds or less)

that typically set-up for 6 months or less. Though these operations do notify higher level government authorities for approval to access the remote area, they do not always consult with the local government authorities. As noted by one of the rural municipalities:

"we usually find out about them by accident when our assessment officers stumble across them"

Data Source # 5) Public Health Records:

In order to provide catering services in remote camps the operation must have a *Food Establishment Permit*, issued through the Public Health Division of the Regional Health Authority (RHA). Consultation with the three RHAs that provide services in the NADC region (Aspen, Northern Lights, and Peace Country) resulted in a review of the permits that were issued in 2005-2006. Using Table 2, staff of the RHAs were asked to identify the remote camps on record and the estimated number of beds that would be in each camp based upon the information provided on the permit. [16] Noticeable in Table 3a (see pg. 28), the total number of beds that the RHAs reported far exceed that provided by the majority of municipal authorities; perhaps an indication of the lack of consultation occurring among higher level and local government authorities. During consultation with the RHAs, all indicated a willingness to work collaboratively with local government authorities to share the collection of population data that impacts "per-capita" funding (e.g. reformatting the *Food Establishment Permit* to match the data needs of the municipalities). Note that the Aspen Regional Health Authority provided a list of companies registered. Companies providing remote camp beds in the rural municipalities in the Aspen area were contacted. For companies that did not provide feedback a baseline of 24 beds was applied to mobile camps and a baseline of 48 beds was applied to semi-permanent camps.

11 *Alberta Oilfield Service Supply Directory* – http://www.albertaoilfieldservicesupplydirectory.com

12 *2005 Municipal Profiles* - Alberta Municipal Affairs. http://www.municipalaffairs.gov.ab.ca/

13 2005 *Albert Accommodation Guide* – Alberta Hotel and Lodging Association. http://www.albertahotels.ab.ca/

14 2005 *Alberta Campground Guide* - Alberta Hotel and Lodging Association. http://www.albertahotels.ab.ca/

15 See Appendix A - Rural Municipal Districts in Northern Alberta and Urban Service Centers

16 Environmental Health Services – Regional Health Authorities.

NOTE

The five data sources used in this research project provided baselines to quantify the shadow population in the rural municipalities in Northern Alberta. It should be highlighted at this point that these data sources reflect a bare minimum in that the numbers collected do not capture other potential sources of information such as rental units (especially in the towns and cities), smaller operations of 2 – 6 workers that cook for themselves, road-side campers, or transient workers that are provided room and board with their employers, family, friends, or local residents. Also, because the energy sector is such a huge contributor to the use of transient workers, the focus of this research project has largely been industrial; however, this is not the only sector that imports transient workers.

The agricultural, forestry, tourism, and business sectors also contribute to the total number of transient workers. If anything, this research report under-estimates the actual shadow population in Northern Alberta and realistically only reflects a relative magnitude of the number of transient workers in the north. However, the research project does provide baseline data which has not been previously documented for local government authorities in their pursuit for financial recognition of the costs incurred in hosting transient workers. It is anticipated that the enumeration procedure designed in this research report will lay the foundation for standardizing the quantification of the shadow population in Northern Alberta in future years.

Section 1.6 Culling the Baselines

Recognizing that the information in this research project could be of benefit to the northern region it was a priority to ensure that the findings were credible. Part of the research process included a review of a number of provincial statistics and industry cycles to determine the contribution each of the five sources of the baseline data could realistically contribute to a valid calculation of a shadow population for each of the rural municipalities. Collectively, this component of the research process resulted in the conclusion that quantifying the shadow population was more complex than simply adding the total number of beds from the five data sources. A number of considerations emerged in the design of the methodology used to quantify the shadow population. These considerations are noted below as an assumption or as a conversion factor. The assumptions set the conceptual framework for designing the enumeration process while the conversion factors apply provincial statistics and industry cycles to the baseline data (culling).

Assumption # 1) Overlap of Data:

There will be an overlap among some sources of information. Hence, it is not valid to take the baselines for each source and add to a total. To equate the number of beds to the number of transient workers, duplication needed to be identified and subtracted. Of the five sources for baseline data used in this research project, three had the potential of overlapping each other – industry remote camps, municipal development permits, and public health records. For the purpose of this report, only one of these data sources was selected to contribute to the shadow population for each municipality. The source selected, which varied across municipalities, was the one that reported the highest number of beds as per the records collected.

Assumption # 2) Reciprocity of Impact:

Relative to a rural municipality and the urban service centers within its boundaries, the impact of the shadow population is reciprocal. Transient workers make use of the services and resources in the urban service centers. And when on-site at the remote camps the demand on services such as access to resource roads, water, and sewer, impacts the municipal level.

Conversion Factor # 1) Number of beds in remote camps:

Three data sources provided the number of beds in remote camps - camp/catering companies, municipal development permits, and public health records. Unless otherwise indicated, all beds in the remote camps were assumed to be used for a maximum of six months reflecting the peak period reported by industry (October to March). As noted in the previous assumptions, because of potential overlap, only one of these data sources was used to determine the baseline number of beds for remote camps. The baseline number used was multiplied by 50% (annual usage rate) to cull the contribution of remote camps to the shadow population. Where 12 month operations was reported, all beds from these camps had an annual usage rate of 100% applied. In Table 2 12 month beds are identified with an "*".

Conversion Factor for Remote Camps = Number of beds x 50%

12 month beds = 100%

Conversion Factor # 2) Hotels and Motels:

For hotels/motels double occupancy was assumed. However, hotels and motels do not have 100% occupancy for the whole year. Also, the annual occupancy rates are not 100% industrial. Using annual statistics compiled by *Alberta Economic Development - Tourism*, the most recent annual average occupancy rate (2004) for the hotels and motels in Northern Alberta is 72%. Of this, 56% of the bookings were categorized as industrial. [17] These provincial statistics were applied to cull the contribution of hotels/motels to the shadow population.

Conversion Factor for Hotels and Motels = (2 x # of rooms) x 72% x 56%

Conversion Factor # 3) Camp Sites:

For camp sites double occupancy is assumed. Standard open season is May to September – 5 months. This results in an annual usage rate of 40%. The collection of "visitor category" for camp sites is not as consistently collected as it is for the hotel industry. [18] For the purpose of this research project, the annual occupancy rate (72%) and industrial category rate (56%) reported for the hotel industry were also applied to the number of camp sites within each municipality.

Conversion Factor for Camp Sites = (2 x # of campsites) x 40% x 72% x 56%

17 Alberta Accommodation Statistics - 2004 - Ministry of Alberta Economic Development
18 Roy Finzel. Research and Assessment Coordinator - Community Development – Government of Alberta

Section 1.7 Calculating the Shadow Population

Using the assumptions and conversion factors presented in the previous section, the following sample and the accompanying details explains the quantification procedure created in this research project for calculating the shadow population. Data collected for the Municipal District of Mackenzie No. 23 was selected as the example.

INPUT

	1	**2**			**3**	**4**		
Municipal District	**Population 2005**	**Number of Remote Camp Beds**			**Hotel /Motel Rooms**	**Camp Sites**		
		Municipal	Industry	Health				
M.D. OF MACKENZIE NO. 23 *711 beds = 12 months	9,687	NA	1746	BL = 2305*	BL = 660	BL = 118	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1508**			**532**	**38**	**2078**	**21.5%**

OUTPUT

1 **2**

Input 1) The official population is used in the final calculation to determine if the shadow population is 10% or more of the permanent population.

Input 2) Because of potential overlap only the highest number of beds reported will be used from one of the three sources that provided data on the number of beds in remote camps. The data source selected is indicated by "BL" . Also, in this example industry reported 8 camps that operated for 12 months. Combined these 8 camps had a total of 711 beds, indicated by the "*". The beds in these camps, referred to as semi-permanent, were considered to have an annual usage rate of 100%. The calculation below demonstrates the application of the conversion factors for the number of beds reported in remote camps.

Remote Camps Contribution

Step 1) 2305 (*RHA total beds reported*) – 711 (*12 month beds*) = 1594 (*six month beds*).

Step 2) 1594 (*six month beds*) x 50% (*1/2 year usage*) = 797 (*six month beds*)

Step 3) 797 (*six month beds*) + 711 (*12 month beds*) = **1508**

Input 3) Number of hotel/motel rooms collected for the urban service centers within the boundaries of the municipality.

Hotel/Motel Contribution

Step 1) 2 x number of rooms *(double occupancy)* = 1320 beds

Step 2) 1320 x 72% *(annual occupancy rate)* = 950

Step 3) 950 x 56% *(industrial usage rate)* = **532**

Input 4) Number of camp sites within the boundaries of the municipality.

Camp Site Contribution

Step 1) 2 x number of campsites *(double occupancy)* = 236

Step 2) 236 x 40% *(annual usage rate)* = 94

Step 3) 94 x 72% *(annual occupancy rate)* = 68

Step 4) 68 x 56% *(industrial usage rate)* = **38**

Output 1) Total of all converted numbers.

1508 *(remote camp beds)* + 532 *(hotel beds)* + 38 *(camp site beds)* = **2078**

This number is the shadow population quantified for this municipality.

Output 2) The magnitude of the shadow population. Calculated by dividing the total shadow population by the total official population.

2078 / 9687 = 21.5%

Result

The M.D. of Mackenzie No. 23 would qualify for the authorization of a shadow population in the municipal census.

Using the calculation methodology detailed in the above example, Table 1.1 presents the shadow population that was calculated for each of the rural municipalities within the boundaries of the Northern Alberta Development Council. Table 1.2 presents the total shadow population collected for all of the rural municipalities within the boundaries of the Northern Alberta Development Council.

Table 1:1 Shadow Population Calculated for Each Rural Municipality in Northern Alberta - Page 1 of 5

Municipal District	Population 2005	Number of Beds Reported						
		Municipal	Industry	Health	Hotel Rooms	Camp Sites		
ATHABASCA – COUNTY NO. 12 *194 beds = 12 months	7,521	NA – R	BL = 218*	0	BL = 229	BL = 686	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**206**			**185**	**221**	**612**	**8.1%**
M.D. OF BIG LAKES	4,479	0	64	BL = 75	BL = 189	BL = 1478	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**38**			**152**	**477**	**667**	**14.9%**
BIRCH HILLS COUNTY	1,644	NR	BL = 22	20	0	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**11**			**0**	**0**	**11**	**>1%**
M.D. OF BONNYVILLE NO. 87 *100 beds = 12 months	8,399	BL = 150*	150	0	BL = 236	BL = 576	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**125**			**190**	**186**	**501**	**6.0%**

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

Notes: BL = Baseline NA = Not Available – Responded. NR = No Response

Table 1:1 Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 2 of 5

Municipal Districts	Population 2005	Number of Beds Reported						
		Municipal	Industry	Health	Hotel Rooms	Camp Sites		
M.D. OF CLEAR HILLS	2,772	NA – R	0	BL = 1000	0	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**500**			**0**	**0**	**500**	**18.0%**
M.D. OF FAIRVIEW NO. 136	1,829	NR	BL = 25	20	BL = 67	BL = 123	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**13**			**54**	**40**	**107**	**5.6%**
GRANDE PRAIRIE COUNTY NO. 1	15,638	40	20	BL = 250	BL = 45	BL = 177	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**125**			**36**	**57**	**218**	**1.4%**
M.D. OF GREENVIEW NO. 16 *345 beds = 12 months	5,433	NR	728	BL = 5680*	BL = 782	BL = 532	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**3013**			**631**	**172**	**3816**	**70.2%**

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

Notes: BL = Baseline NA = Not Available – Responded NR = No Response.

Table 1:1 Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 3 of 5

Municipal Districts	Population 2005	Number of Beds Reported						
		Municipal	Industry	Health	Hotel Rooms	Camp Sites		
LAKELAND COUNTY (Does not include Air Range) *636 beds = 12 months	5,301	0	BL = 1288*	0	BL = 231	BL = 724	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**962**			**186**	**236**	**1384**	**26.1%**
M.D. OF LESSER SLAVE LAKE NO. 24 *240 beds = 12 months	2,840	NR	BL = 352*	0	BL = 396	BL = 464	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**296**			**319**	**150**	**765**	**26.9%**
M.D. OF MACKENZIE NO. 23 *711 beds = 12 months	9,687	NR	1746	BL = 2305*	BL = 660	BL = 118	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1508**			**532**	**38**	**2078**	**21.5%**
M.D. OF NORTHERN LIGHTS NO. 22 *95 beds = 12 months	3,663	NA – R	239	BL = 240*	BL = 73	BL = 125	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**168**			**59**	**40**	**267**	**7.3%**

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

Notes: BL = Baseline NA = Not Available – Responded NR = No Response.

Table 1:1 Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 4 of 5

Municipal Districts	Population 2005	Number of Beds Reported						
		Municipal	Industry	Health	Hotel Rooms	Camp Sites		
NORTHERN SUNRISE COUNTY * 88 beds = 12 months	2,354	BL = 668*	234	80	BL = 414	BL = 265	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**378**			**334**	**85**	**797**	**33.9%**
M.D. OF OPPORTUNITY NO. 17 * 1274 = 12 months	2,570	NA	BL = 1452*	0	BL = 61	BL = 35	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1363**			**49**	**11**	**1423**	**55.4%**
M.D. OF PEACE NO. 135	1,496	0	0	BL = 40	BL = 15	BL = 163	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**20**			**12**	**53**	**85**	**5.7%**
SADDLES HILLS COUNTY	2,566	BL = 200	0	0	0	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**100**			**0**	**0**	**100**	**3.9%**

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

Notes: BL = Baseline NA = Not Available – Responded NR = No Response.

Table 1:1 Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 5 of 5

Municipal Districts	Population 2005	Number of Beds Reported						
		Municipal	Industry	Health	Hotel Rooms	Camp Sites		
M.D. OF SMOKY RIVER NO. 130	2,379	0	0	BL = 60	BL = 16	BL = 48	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**30**			**13**	**15**	**58**	**2.4%**
M.D. SPIRIT RIVER NO. 133	824	NR	0	BL = 40	BL = 74	BL = 139	Shadow Population Count	Percent of 2005 Population
Conversion Factors Applied		**20**			**60**	**45**	**125**	**15.2%**
ST. PAUL COUNTY NO. 19	6,145	0	0	0	BL = 216	BL = 469	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**0**			**174**	**151**	**325**	**5.3%**
R. M. OF WOOD BUFFALO [1]	61,397	11,779			Not Collected		Shadow Population Collected	Percent of 2005 Population
Authorized - 2005		Note: The majority of the camps in the Wood Buffalo area operate 12 months.					**11,779**	**19.2%**
WOODLANDS COUNTY	3,818	NR	BL = 314	0	BL = 486	BL = 406	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**157**			**392**	**131**	**680**	**17.8%**

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

1 Shadow population authorized for 2005

Notes: BL = Baseline NA = Not Available – Responded NR = No Response

Table 1.2 Total Shadow Population Calculated for Rural Municipalities in Northern Alberta

All Rural Municipal Districts Within the boundary of the Northern Alberta Development Council	Total Population 2005	# of Beds in Remote Camps			# Hotel Rooms	# Camp Sites
		Municipal	Industry	Health		
Raw Data Collected – Totals	152,755	1058	6852	9,810	4190	6528
Total Population 2005 excluding Regional Municipality of Wood Buffalo	91,358					
Total Beds Identified in Remote Camps		17,720				
Used As Baselines in Table 2 (duplication extracted)		1018	3671	9,690		
Total - Baselines		14,379 Total 12 month beds = 3,683				
Conversion Factors Applied		9,032			3,380	2,107

Totals	Shadow Population Collected	Percent of 2005 Population
Without Regional Municipality of Wood Buffalo	**14,519**	**15.9%**
With Regional Municipality of Wood Buffalo	**26,298**	**17.2%**

Wood Buffalo - Shadow population authorized for 2005 = 11,779

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Campsites = (2 x BASELINE) x 40% x 72% x 56%

Note: Cumulative effect of rounding to the 10th for each municipality reflected in the calculation of total for NADC region.

1.8 Comments

Findings

The quantification procedure designed in this research project resulted in 11 of the 21 rural municipalities in Northern Alberta qualifying for authorization of a shadow population in their municipal census. For the whole region of the Northern Alberta Development Council a total shadow population of 26,298 was identified (conversion factors applied); reflecting an overall magnitude of 17.2%. As indicated in Table 1.1, the range of the magnitude of the shadow populations across the rural municipalities was <1% (Birch Hills) to >70% (Greenview).

Part 1 of this research project lays the foundation for Part 2. With the indication of magnitude of the shadow population and where the hubs of these transient workers are, it is now possible to use this information to determine if there is a relationship between magnitude and the rates of occurrence for selected social indicators (e.g. crime rates, substance abuse, emergency department usage, sexually transmitted diseases, etc...). As a closing comment, it is necessary again to acknowledge that Northern Alberta needs and benefits from the flux of transient workers in the current economic boom. The intent of this research project is to demonstrate the need for the acknowledgement of impact on services and resources to higher level decision makers to ensure these services and resources are supported to the level of usage.

Reciprocity

An important element in applying the raw data collected in this research project is the principal of reciprocity. Taking the Municipal District of Greenview as an example, the geographic layout of this municipal district obviates that the shadow population identified is spread across a large area that has pockets of activity. Considering the foothills within this area, the social impact of the total shadow population of 3816 would be centered toward the urban centers of Fox Creek, Grande Cache, Grande Prairie, and Valleyview. For the purpose of the rural municipality the collective number can be used in an enumeration but for the urban service centers the allocation of the raw data would need to be tempered with these realties of distribution. Local knowledge of industrial activity and production cycles should be considered to ensure the shadow populations enumerated reflect numbers that are credible. Relative to this effort, to use the information in this research project to the benefit of all local government authorities within a municipal district,

decision makers should review the information in partnership. Appendix D presents sample shadow population calculations for selected urban service centers within the rural municipal districts. Because the Cities of Cold Lake and Grande Prairie are service center hubs, preliminary shadow populations have been calculated (Appendix C) assuming multiple rural municipal districts are contributing to the total magnitude of the shadow populations.

Regional Leadership

One of the possible solutions to address reciprocity and "who can use the numbers for what" is for the Northern Alberta Development Council to lead a request for regional authorization in partnership with all local government authorities. Ultimately, the enumeration of the shadow population is intended to increase funding in the North, whether this funding be for infrastructure or services. Presenting a collective voice to advocate for recognition of the contributions and needs of Northern Alberta would increase the utility of the information presented in Part 1 of this research project. Also, the information presented in Part 1 of this report can be used by the services in the North that are dependent upon per-capita funding streams; such as health and enforcement services.

Issues Identified During Research

Disaster Response - As noted in this report, (Section 1.2) there is no central registry of transient workers in remote camps. A major concern this raises is the safety of the workers in the camps if there was a disaster; such as a forest fire. If the municipal authorities are not aware of all the remote camps operating within their boundary, the workers at these camps are at risk. The following excerpt from *Fire Safety at Industrial Camps - Alberta Fire Safety Code – Section 2.15* confirms there is a required registration process for fire safety at remote camps.

> It is the owners responsibility to appoint and train a fire crew, to appoint a person to be responsible for fire prevention, and to ensure camp occupants are familiar with fire hazards. These requirements apply for all camps; however, they become more important as the size of the camp increases.
>
> It is not the intent of the Alberta Fire Code that the fire crew be equipped and trained to the level expected of a municipal volunteer or paid fire department. It is expected the crew will be knowledgeable of the site and building layout and fire safety systems, and capable of performing basic fire fighting duties with the fire suppression equipment provided.
>
> In assessing a camp site it is the responsibility of the authority having jurisdiction to ensure the owner has complied with the above.

Though there are required fire safety procedures in place for a remote camp to operate, awareness of the camps is lacking at the rural municipal district level; as evidenced by the low number of beds reported by the majority of the rural municipal districts in Table 1.1.

Hotels / Motels – The approach of this research project was to use a readily available accommodation source, the *Alberta Accommodation Guide*, which is updated each year. The accommodations listed in this source are registered and approved through the Alberta Hotel and Lodging Association. However, not all the hotels/motels in Northern Alberta are listed in the guide. For example, for the Town of Fairview, one hotel is listed in the *2005 Alberta Accommodation Guide* yet there are 4 listed in the *2005/2006 Telus Directory*. It would be to the benefit of the urban service centers to advocate for all local operators to register with the association.

Tourism Destination Regions - The boundary for the tourism region called Alberta North, as defined by Alberta Economic Development, does not match the boundary of the Northern Alberta Development Council. Most notably, the south-east portion of the Northern Alberta Development Council boundary (i.e.…St. Paul, Cold Lake, Bonnyville) is considered to be in the Central Tourism Region. For the purpose of this research project, the statistics of both regions were similar enough that the outcomes would not be significantly different with the conversion factors used to calculate the shadow populations. The usage and category statistics for Alberta North were used as the conversion factors for all of the rural municipalities with the boundary of the Northern Alberta Development Council. The issue is presented from a research prospective only. The incongruence across government departments in defining service boundaries creates challenges for statistical comparisons at the regional level.

Appendix A

Rural Municipal Districts in Northern Alberta

and

Urban Service Centers Within Each Boundary

Sources: 2005 Municipal Profiles – Alberta Municipal Affairs

Communities Within Specialized and Rural Municipalities – January 2006

Rural Municipal District	Urban Service Centers Towns & Villages	Population 2005
ATHABASCA - COUNTY NO. 12		7,521
	Athabasca (T)	2,415
	Boyle (V)	851
M.D. OF BIG LAKES		4,479
	High Prairie (T)	2820
	Kinuso (V)	231
	Swan Hills (T)	1,807
BIRCH HILLS COUNTY		1,644
	NONE	
M.D. OF BONNYVILLE NO. 87		8,399
	Bonnyville (T)	5,896
	Glendon (V)	459
M.D. OF CLEAR HILLS		2,772
	Hines Creek (V)	437
M.D. OF FAIRVIEW NO. 136		1,829
	Fairview (T)	3,150
GRANDE PRAIRIE COUNTY NO. 1		15,638
	Beaverlodge (T)	2176
	Hythe (V)	749
	Sexsmith (T)	1,934
	Wembley (T)	1,542
M.D. OF GREENVIEW NO. 16		5,433
	Fox Creek (T)	2,337
	Grande Cache (T)	3,828
	Valleyview (T)	1,856
LAKELAND COUNTY		5,301
	Lac La Biche (T)	2,776
M.D. OF LESSER SLAVE LAKE NO. 24		2,840
	Slave Lake (T)	6,600
M.D. OF MACKENZIE NO. 23		9,687
	High Level (T)	3,849
	Rainbow Lake (T)	1,186
M.D. OF NORTHERN LIGHTS NO. 22		3,663
	Manning (T)	1,293

Rural Municipal District	Urban Service Centers Towns & Villages	Population 2005
NORTHERN SUNRISE COUNTY		**2,324**
	Nampa (V)	372
	Peace River (T)	6,240
M.D. OF OPPORTUNITY NO. 17		2,570
	NONE	
M.D. OF PEACE NO. 135		1,496
	Berwyn (V)	546
	Grimshaw (T)	2,435
SADDLE HILLS COUNTY		2,566
	NONE	
M.D. OF SMOKY RIVER NO. 130		2,379
	Donnelly (V)	377
	Falher (T)	1,109
	Girouxville (V)	306
	McLennan (T)	804
M.D. SPIRIT RIVER NO. 133		824
	Rycroft (V)	609
	Spirit River (T)	1,100
ST. PAUL COUNTY NO. 19		6,145
	Elk Point (T)	1,440
	St. Paul (T)	5,144
R. M. OF WOOD BUFFALO		61,397
	Fort McMurray	Included in Regional
WOODLANDS COUNTY		3,818
	Whitecourt (T)	8,747

Appendix B

Provincial Accommodation and Usage Statistics

Tourism Region	2004 Occupancy Rate	Source of Demand		
		Tourists	Business	Industrial
Alberta North	**72%**	8%	31%	**56%**
Edmonton	65%	20%	41%	20%
Calgary	67%	27%	47%	11%
Canadian Rockies	61%	70%	4%	3%

Source: Alberta Accommodation Statistics - 2004 - Ministry of Alberta Economic Development

The above table presents the most recent compilation of the annual survey completed by accommodation operators in the Province. The inserts below were extracted from preliminary surveys designed to gauge business perceptions of operators for coming and past seasons. Of interest is the noticeable increase in the demand for accommodations in the northern region from the energy sector. This information, if applied to the quantification procedure designed in this research project, and used by local government authorities would increase the shadow population counts.

Post-Summer 2005 Survey – Northern Alberta

Hotel operators in northern Alberta communities entered the summer with expectations of occupancies and revenues similar to those attained in 2004. They were not disappointed. The majority of hotels operating in the north experienced revenue increases between 2% and 10%. Operators also report **increases in occupancy ranging from 5% to as high as 30%**. September is set to follow the strong summer with all operators expecting increases in occupancy and revenue, driven primarily by increased activity in the oil patch.

Pre-Summer 2006 Survey - Northern Alberta

The first quarter of 2006 in most Northern Alberta venues is characterized as exceptional, and described by operators in terms such as “awesome,” “extreme” and “best ever.” The booming energy sector contributed to nearly full occupancy in northern communities. **Occupancy well into the 90% range was the norm**, an increase from 2005. Average room rates benefited from the heavy demand and exceeded 2005 levels. Corporate and crew business dominated room rentals with slow periods and weekends being filled by other corporate and group business. Grande Prairie reported reservations not made at least one month in advance resulted in “no room at the inn.” To alleviate room shortages, new properties are coming on stream in many northern communities. For example, in the next 2 years seven new properties will be built in Grande Prairie and two new hotels will shortly come on stream in Peace River.

Appendix C

Reciprocity of Impact

Preliminary Shadow Population Counts for the

Cities Cold Lake and Grande Prairie

Conversion Factors Applied

				Rural Municipality Shadow Population Calculated - Table 1					
	Population 2005	Hotel Rooms BL=585	Camp Sites BL=399	Athabasca	Bonnyville	Lakeland	St. Paul	Shadow Population Collected	Percent of 2005 Population
COLD LAKE	11,595	472	129	612	503	1384	325	3425	29.5%

				Rural Municipality Shadow Population Calculated - Table 1					
	Population 2005	Hotel Rooms BL=1601	Camp Sites BL=485	Greenview	Saddle Hills	Birch Hills	GP	Shadow Population Collected	Percent of 2005 Population
GRANDE PRAIRIE	44,631	1291	156	3816	100	11	218	5592	12.5%

Table C: Preliminary shadow population calculated for the Cities of Cold Lake and Grande Prairie

Conversion Factors

Number of beds in remote camps taken from Table 1
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Campsites = (2 x BASELINE) x 40% x 72% x 56%

Note: 1 – Not collected

Appendix D

Reciprocity of Impact

Shadow Population Counts for Selected Towns

Table D - BASELINE DATA

Selected Urban Service Centers

Table D.a: Baseline Data for Towns Selected to Calculate Preliminary Shadow Population

Municipal Districts	Town	2005 Population	Remote Camp Beds Identified in MD	Hotel Units	Camp Sites *
ATHABASCA COUNTY NO. 12	Athabasca	2,415	218	162	298
M.D. OF BIG LAKES	High Prairie	2820	75	110	1041
M.D. OF BONNYVILLE NO. 87	Bonnyville	5,896	150	236	566
M.D. OF GREENVIEW NO. 16	Grande Cache	3,828	5680*	347	139
LAKELAND COUNTY	Lac La Biche	2,776	1288	231	724
M.D. OF LESSER SLAVE LAKE NO. 24	Slave Lake	6,600	352	396	464
M.D. OF MACKENZIE NO. 23	High Level	3,849	2305	571	13
NORTHERN SUNRISE COUNTY	Peace River	6,240	668	398	248
ST.PAUL COUNTY NO. 19	St. Paul	5,144	0	174	270
WOODLANDS COUNTY	Whitecourt	8,747	314	486	406

Note: *****As per the *Alberta Campground* guide used as the resource for baseline data, # of camp sites reflects the postal address listed for the operations.

Table D - CONVERSION FACTORS APPLIED

Table D.b: Preliminary Shadow Population Calculated for Selected Towns.							
Municipal Districts	**Urban Service Centers**	**2005 Population**	**Remote Camp Beds Identified in MD**	**Hotel Units**	**Camp Sites**	Shadow Population Collected	Percent of 2005 Population
ATHABASCA COUNTY NO. 12	Athabasca	2,415	206	131	96	433	17.9%
M.D. OF BIG LAKES	High Prairie	2,820	38	89	336	463	16.4%
M.D. OF BONNYVILLE NO. 87	Bonnyville	5,896	125	190	183	498	8.4%
M.D. OF GREENVIEW NO. 16	Grande Cache	3,828	3013*	280	45	3338	87.2 %
LAKELAND COUNTY	Lac La Biche	2,776	962	186	234	1382	49.8%
M.D. OF LESSER SLAVE LAKE NO. 24	Slave Lake	6,600	296	319	150	765	11.6%
M.D. OF MACKENZIE NO. 23	High Level	3,849	1508	460	4	1972	51.2%
NORTHERN SUNRISE COUNTY	Peace River	6,240	378	321	80	779	12.5%
ST. PAUL COUNTY NO. 19	St. Paul	5,144	0	140	87	227	4.4%
WOODLANDS COUNTY	Whitecourt	8,747	157	392	131	680	7.8%

Conversion Factors

Number of Beds Reported = BASELINE x 50% NOTE: If 12 month usage identified for remote camps these beds were 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Campsites = (2 x BASELINE) x 40% x 72% x 56%

Notes: 1 - * The total number of beds in remote camps would be spread across a radius that would also impact the service centers of Fox Creek and Valleyview.

Appendix E
Alternative Quantification Procedure - Peak Period Only
October - March

As noted throughout this research project, the amount of industrial activity in Northern Alberta peaks during the months of October to March. During these six months the demand on resources and services is at a maximum. Being able to meet these needs typically requires annual commitments and contracts. This is especially true for recruiting the human resources needed to deliver the services. For comparison purposes, the calculation of the shadow population for the peak period only, without conversion factors applied to the remote camps, is presented in the following appendix. The baseline data provided for camp-sites was removed in the following tables as the period of October to March does not coincide with this industry's operational time frame.

Table E: Alternative Calculation – Peak Period Only

Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 1 of 5

Municipal District	Population 2005	Number of Beds Reported					
		Municipal	Industry	Health	Hotel Rooms		
ATHABASCA – COUNTY NO. 12	7,521	NA – R	BL = 218	0	BL = 229	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**218**			**185**	**403**	**5.4.%**
M.D. OF BIG LAKES	4,479	0	64	BL = 75	BL = 189	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**75**			**152**	**227**	**5.1%**
BIRCH HILLS COUNTY	1,644	NR	BL = 22	20	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**22**			**0**	**22**	**>1%**
M.D. OF BONNYVILLE NO. 87	8,399	BL = 150*	150	0	BL = 236	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**150**			**190**	**340**	**4.0%**

Conversion Factors
Number of Beds Reported = 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Camp Sites = Not applicable

Notes: BL = Baseline NA-R = Not Available – Responded. NR = No Response Peak period =- October to March

Table E: Alternative Calculation – Peak Period Only

Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 2 of 5

Municipal Districts	Population 2005	Number of Beds Reported					
		Municipal	Industry	Health	Hotel Rooms		
M.D. OF CLEAR HILLS	2,772	NA – R	0	BL = 1000	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1000**			**0**	**1000**	**36.1%**
M.D. OF FAIRVIEW NO. 136	1,829	NR	BL = 25	20	BL = 67	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**25**			**54**	**79**	**4.3%**
GRANDE PRAIRIE COUNTY NO. 1	15,638	40	20	BL = 250	BL = 45	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**250**			**36**	**286**	**1.8%**
M.D. OF GREENVIEW NO. 16	5,433	NR	728	BL = 5680	BL = 782	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**5680**			**631**	**6311**	**116.2%**

Conversion Factors
Number of Beds Reported = 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Camp Sites = Not applicable

Notes: BL = Baseline NA-R = Not Available – Responded NR = No Response. Peak period =- October to March

Table E: Alternative Calculation – Peak Period Only

Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 3 of 5

Municipal Districts	Population 2005	Number of Beds Reported					
		Municipal	Industry	Health	Hotel Rooms		
LAKELAND COUNTY (Does not include Air Range)	5,301	0	BL = 1288	0	BL = 231	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1288**			**186**	**1474**	**27.8 %**
M.D. OF LESSER SLAVE LAKE NO. 24	2,840	NR	BL = 352	0	BL = 396	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**352**			**319**	**671**	**23.6%**
M.D. OF MACKENZIE NO. 23	9,687	NR	1746	BL = 2305	BL = 660	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**2305**			**532**	**2837**	**29.3 %**
M.D. OF NORTHERN LIGHTS NO. 22	3,663	NA – R	239	BL = 240	BL = 73	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**240**			**59**	**299**	**8.2 %**

Conversion Factors
Number of Beds Reported = 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Camp Sites = Not applicable

Notes: BL = Baseline NA-R = Not Available – Responded NR = No Response. Peak period =- October to March

Table E: Alternative Calculation – Peak Period Only

Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 4 of 5

Municipal Districts	Population 2005	Number of Beds Reported					
		Municipal	Industry	Health	Hotel Rooms		
NORTHERN SUNRISE COUNTY	2,354	BL = 668	234	80	BL = 414	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**668**			**334**	**1002**	**42.6 %**
M.D. OF OPPORTUNITY NO. 17	2,570	NA	BL = 1452	0	BL = 61	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**1452**			**49**	**1501**	**58.4%**
M.D. OF PEACE NO. 135	1,496	0	0	BL = 40	BL = 15	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**40**			**12**	**52**	**3.5 %**
SADDLES HILLS COUNTY	2,566	BL = 200	0	0	0	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**200**			**0**	**200**	**7.8 %**

Conversion Factors
Number of Beds Reported = 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%
Camp Sites = Not applicable

Notes: BL = Baseline NA-R = Not Available – Responded NR = No Response. Peak period = October to March

Table E: Alternative Calculation – Peak Period Only

Shadow Population Calculated for Each Rural Municipality in Northern Alberta – Page 5 of 5

Municipal Districts	Population 2005	Number of Beds Reported					
		Municipal	Industry	Health	Hotel Rooms		
M.D. OF SMOKY RIVER NO. 130	2,379	0	0	BL = 60	BL = 16	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**60**			**13**	**73**	**3.1 %**
M.D. SPIRIT RIVER NO. 133	824	NR	0	BL = 40	BL = 74	Shadow Population Count	Percent of 2005 Population
Conversion Factors Applied		**40**			**60**	**100**	**12.1 %**
ST. PAUL COUNTY NO. 19	6,145	0	0	0	BL = 216	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**0**			**174**	**174**	**2.8 %**
R. M. OF WOOD BUFFALO	61,397	Not Collected				Shadow Population Collected	Percent of 2005 Population
2005 Shadow Population Authorized						**11,779**	**19.2%**
WOODLANDS COUNTY	3,818	NR	BL = 314	0	BL = 486	Shadow Population Collected	Percent of 2005 Population
Conversion Factors Applied		**314**			**392**	**706**	**18.5 %**

Conversion Factors

Number of Beds Reported = 100%

Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Camp Sites = Not applicable

Notes: BL = Baseline NA-R = Not Available – Responded NR = No Response Peak period = October to March

Table E.a Alternative Calculation – Peak Period Only – October 2005 to March 2006

Total Shadow Population Calculated for Rural Municipalities in Northern Alberta

All Rural Municipal Districts Within the boundary of the Northern Alberta Development Council	Total Population 2005	# of Beds in Remote Camps			# Hotel Rooms
		Municipal	Industry	Health	
Total Population 2005 Excluding Regional Municipality of Wood Buffalo	91,358	1058	6852	9,810	4190
Total Population 2005 Including Regional Municipality of Wood Buffalo	152,755				
Total Beds Identified in Remote Camps Excluding Regional Municipality of Wood Buffalo		17,720			
Used As Baselines in Table E (duplication extracted)		1018	3671	9,690	
Total - Baselines		14,379			3,380

Totals	Shadow Population Collected	Percent of 2005 Population
Without Regional Municipality of Wood Buffalo	**17,759**	**19.4%**
With Regional Municipality of Wood Buffalo	**29,538**	**19.3%**

Wood Buffalo Shadow population authorized for 2005 = 11,779

Conversion Factors
Number of Beds Reported = 100%
Hotel / Motel Rooms = (2 x BASELINE) x 72% x 56%

Notes: Cumulative effect of rounding to the 10th for each municipality reflected in the calculation of total for NADC region.

Table E.b: Comparison of Quantification Procedures - Shadow Population Outcomes				
Rural Municipal District	**Population 2005**	**Annual % 12 Months Tables 1 (pg.25)**	**Peak Period % 6 Months Tables E (pg. 45)**	**Difference + / - or No change (NC)**
ATHABASCA - COUNTY NO. 12	7,521	8.1	5.4	-
M.D. OF BIG LAKES	**4,479**	**14.9**	**5.1**	**-**
BIRCH HILLS COUNTY	1,644	>1	>1	NC
M.D. OF BONNYVILLE NO. 87	8,399	6.0	4.0	-
M.D. OF CLEAR HILLS	2,772	18.0	36.1	+
M.D. OF FAIRVIEW NO. 136	1,829	5.6	4.3	-
GRANDE PRAIRIE COUNTY NO. 1	15,638	1.4	1.8	+
M.D. OF GREENVIEW NO. 16	5,433	70.2	116.2	+
LAKELAND COUNTY	5,301	26.1	27.8	+
M.D. OF LESSER SLAVE LAKE NO. 24	2,840	26.9	23.6	-
M.D. OF MACKENZIE NO. 23	9,687	21.5	29.3	+
M.D. OF NORTHERN LIGHTS NO. 22	3,663	7.3	8.2	+
NORTHERN SUNRISE COUNTY	2,354	33.9	42.6	+
M.D. OF OPPORTUNITY NO. 17	2,570	55.4	58.4	+
M.D. OF PEACE NO. 135	1,496	5.7	3.5	-
SADDLE HILLS COUNTY	2,566	3.9	7.8	+
M.D. OF SMOKY RIVER NO. 130	2,379	2.4	3.1	+
M.D. SPIRIT RIVER NO. 133	824	15.2	12.1	-
ST. PAUL COUNTY NO. 19	6,145	5.3	2.8	-
R. M. OF WOOD BUFFALO	61,397	19.2	19.2	NC
WOODLANDS COUNTY	3,818	17.8	18.5	+
NADC Region - ALL Rural Municipalities	**152,755**	**17.2%**	**19.3%**	+

Note: The alternative quantification procedure in which only the **peak period (October 2005 to March 2006)** is considered in the calculation (assuming 100% usage rate for the beds in the remote camps and excluding camp-sites), results in 10 of the 21 rural municipalities meeting the 10% or more requirement to qualify for authorization of inclusion of a shadow population. The most significant difference between the two quantification procedures impacts the M.D. of Big Lakes. As presented above, the alternative procedure disqualifies this rural municipality.

The following tables present the alternative quantification procedure to calculate the preliminary shadow population for the Cities of Cold Lake and Grande Prairie. For the City of Cold Lake, the alternative quantification procedure results in a decrease in the shadow population captured (see Appendix C). However, the ratio is still substantial (24.7%) relative to the permanent population. For the City of Grande Prairie the alternative quantification procedure results in a significant increase in the shadow population; from 12.5% to 18.2%. Putting it in perspective, for Grande Prairie, during the peak period from October 2005 to March 2006, on any given day there were over 8000 transient workers using the services and resources of the City.

Table E.c Alternative Calculation – Peak Period Only – October 2005 – March 2006

Shadow Population Calculated for the Cities Based Upon the Assumption of Reciprocity

			Rural Municipality Shadow Population Calculated – Table E					
	Population 2005	Hotel Rooms BL=585	Athabasca	Bonnyville	Lakeland	St. Paul	Shadow Population Collected	Percent of 2005 Population
COLD LAKE	11,595	472	403	340	1474	174	2,863	24.7%

			Rural Municipality Shadow Population Calculated - Table E					
	Population 2005	Hotel Rooms BL=1601	Greenview	Saddle Hills	Birch Hills	GP	Shadow Population Collected	Percent of 2005 Population
GRANDE PRAIRIE	44,631	1291	6311	200	22	286	8,110	18.2%