

**Managing Disease Risk in  
Alberta's Wood Bison  
with Special Focus on Bison to the  
West of Wood Buffalo National Park**



**Government  
of Alberta ■**

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## Introduction

Alberta has long recognized that the key issue regarding the management of wild bison is the threat of tuberculosis and brucellosis spreading from infected animals in and around Wood Buffalo National Park to livestock (cattle and domestic bison) and to healthy wild bison.

These introduced cattle diseases represent an ongoing threat to Alberta's livestock industry since they could result in trade restrictions and significant economic losses. In addition, wood bison are listed nationally as 'threatened' and by Alberta as 'endangered.' It will be impossible to fully restore healthy, wild bison populations until these livestock diseases are eradicated, since recovery herds will need to be kept small and relatively confined to reduce their risk of becoming infected. There is also a risk of disease transmission to humans and to other wildlife species. In 1990, a federal Environment Assessment Panel recommended completely eradicating all bison from Wood Buffalo National Park, followed by restocking with disease-free animals. This recommendation was not accepted by the federal government (Parks Canada).

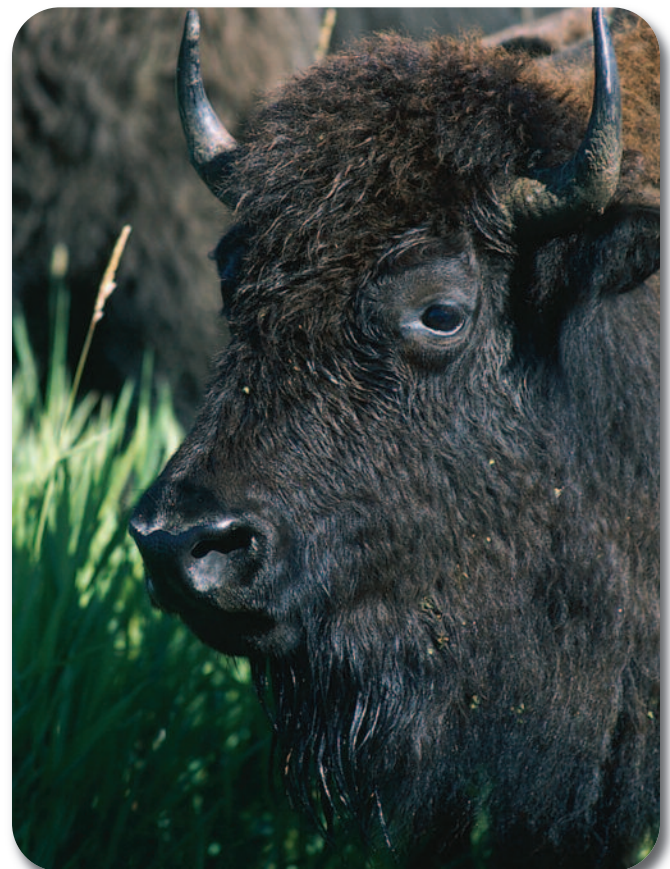
Alberta's long-term goal is to eliminate the disease risk. This would remove **the risk to Alberta's livestock industry and would allow the restoration of wild populations of wood bison across northern Canada. The restoration of wood bison populations would fill a key ecological role and provide substantial cultural and economic benefits to Alberta. Until this long-term goal can be achieved, the interim approach is to prevent the spread of tuberculosis and brucellosis from diseased wild bison to domestic livestock and disease-free wild bison.**

This document has been prepared to outline Alberta's approach for managing the disease risk to both domestic livestock and free-ranging wood bison until such time as a long term solution can be applied to the disease reservoir associated with

Wood Buffalo National Park. This approach is focused on the area to the west of the park, as the Wentzel or Wabasca-Mikkwa bison pose a greater threat to transferring diseases to either domestic livestock or the wild Hay-Zama bison herd than do the Ronald Lake bison herd to the south of the park.

This approach has three broad components:

- Hay-Zama wild bison herd management;
- disease surveillance and risk reduction east of Highway 35; and
- monitoring populations of wild bison east of Highway 35.



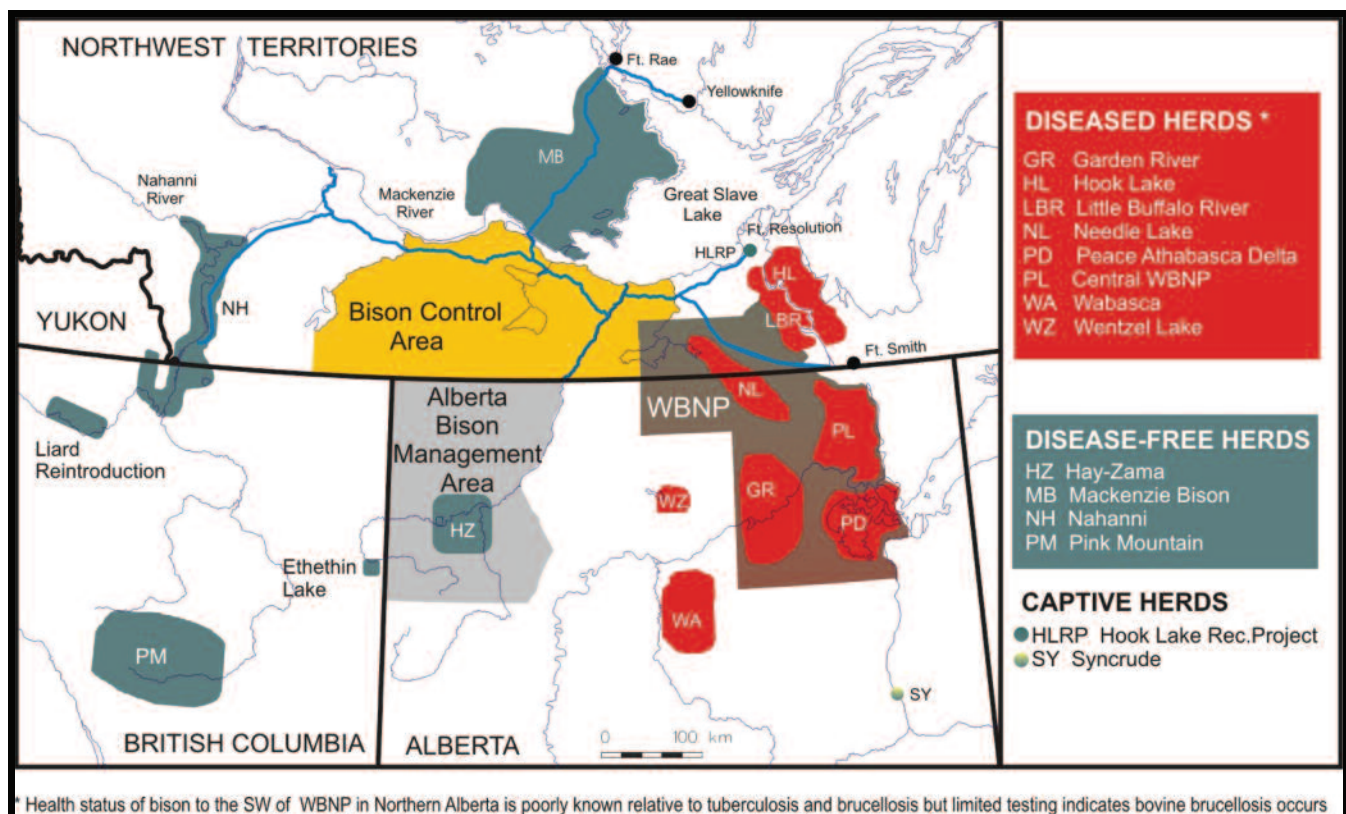
## 1.0 Hay-Zama Wild Bison Management

**Objective** - To maintain the Hay-Zama wild bison recovery herd free of bovine tuberculosis and brucellosis by limiting their numbers and distribution, particularly east towards Highway 35, thereby reducing the opportunity for exposure to diseased bison from the vicinity of Wood Buffalo National Park.

The Hay-Zama wood bison reintroduction program was started in 1983 to re-establish a healthy population of wood bison in north western Alberta. This was a significant element in the national wood bison management plan, which

called for at least one self-sustaining herd in each of Alberta, BC, Yukon, Northwest Territories and Wood Buffalo National Park. The Hay-Zama bison herd has grown rapidly in numbers and distribution since 1994. A goal of the 2008 draft recovery strategy for wood bison in Canada was to protect 'clean' recovery herds from contact with diseased animals. Hay-Zama bison are still considered to be disease free, while bison populations in and around Wood Buffalo National Park are known or assumed to be infected (Figure 1).

Figure 1. Wood bison herds currently classified as diseased or disease-free



The Hay-Zama bison herd has been monitored since the original release. The total number of bison peaked in the winter of 2008 when 652 animals were seen in 63 different groups. Observed range expansion (Figure 2) raised concerns over bison moving east towards diseased bison from Wood Buffalo National Park. In particular, there was specific concern over several instances of bison moving east along the Zama road to and beyond Highway 35.

In the spring of 2008, it was determined that a highly regulated hunting season would be instituted and scheduled annually to stop the Hay-Zama herd from continuing to increase in numbers and distribution. The hunt serves two objectives relevant to this strategy:

- It protects the Hay-Zama herd from the near-inevitability of becoming infected as their numbers and distribution increased. **If this happened, there is a strong probability that the whole herd would have to be culled.**
- It allows for a significant amount of disease testing.

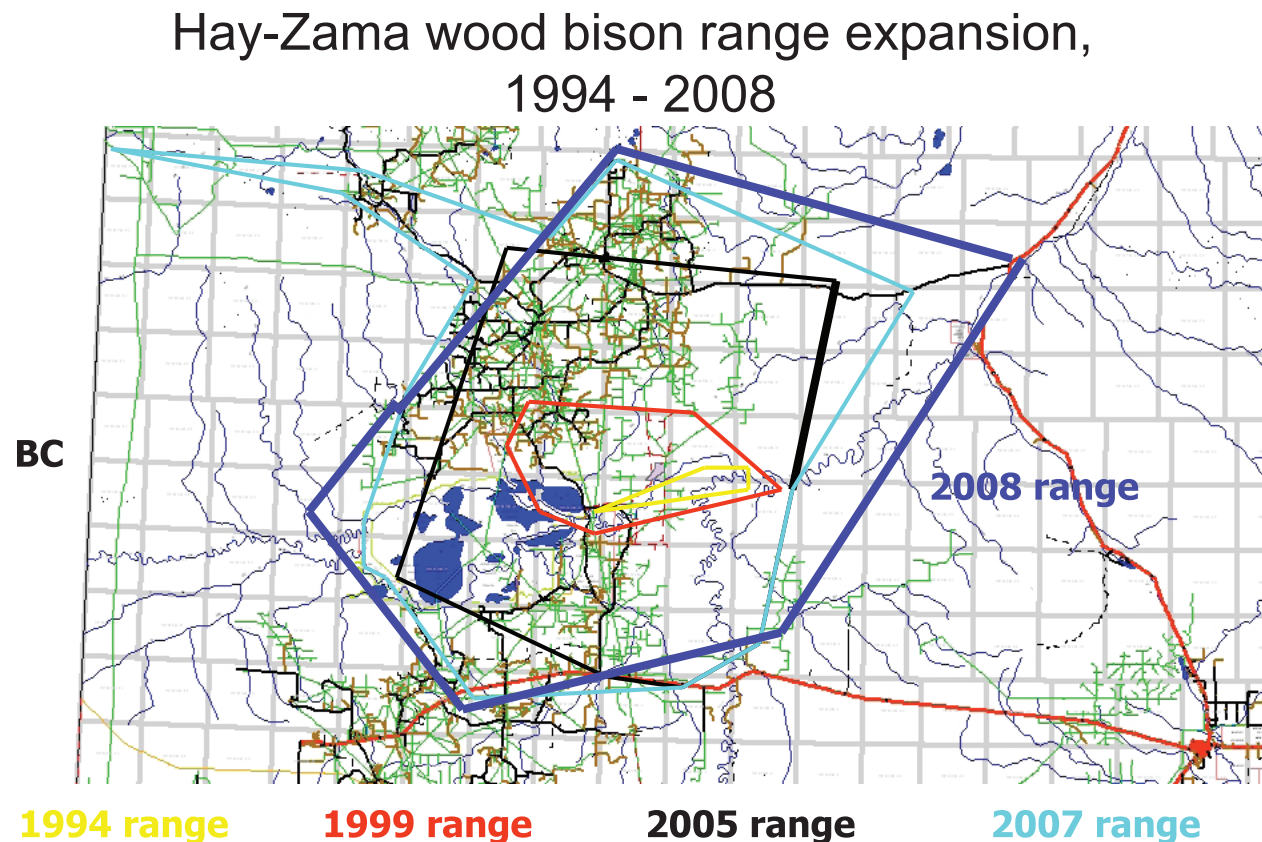
#### Update on hunting strategy

- A significant communications and aboriginal consultation effort went into supporting this hunt. These efforts are ongoing, with regular communications going out to the public,

through a public advisory committee and annual public meetings. To date, there is a very high level of acceptance and support.

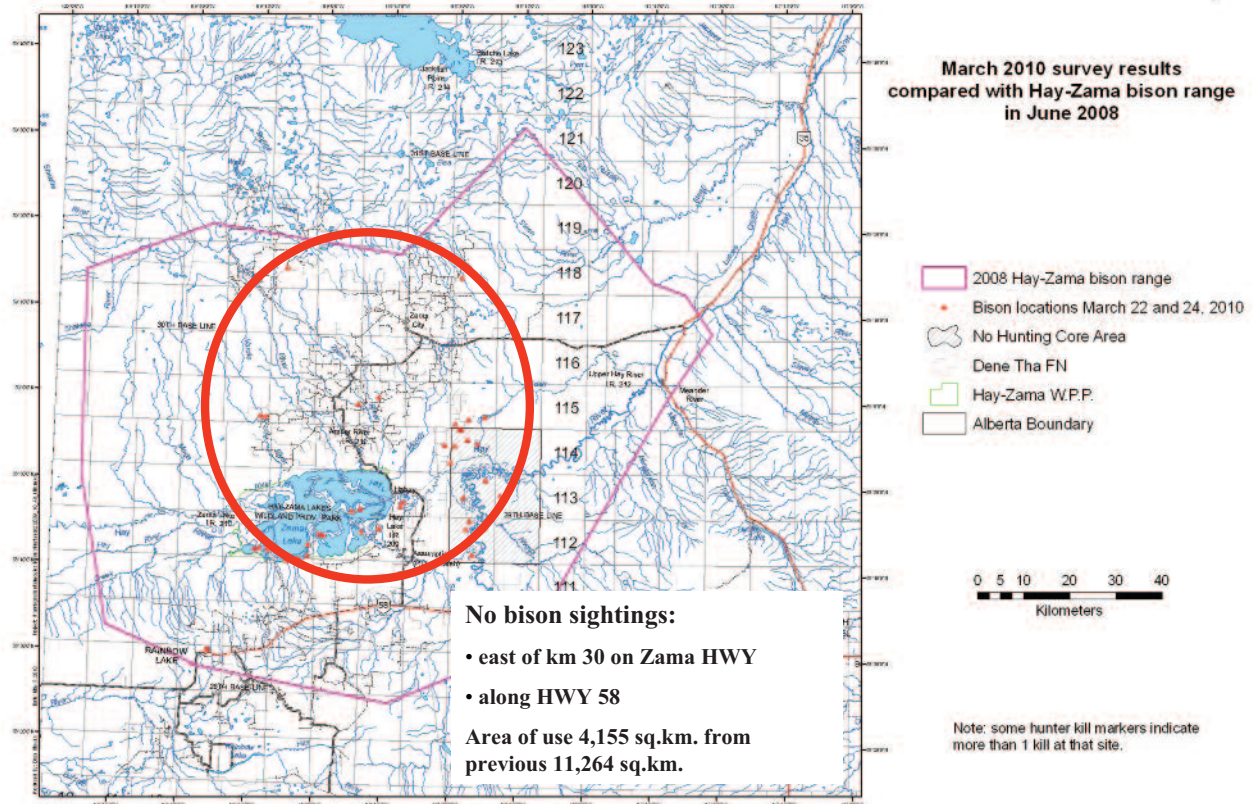
- Prior to the hunt, we had limited information regarding disease status of the Hay Zama bison. To date, with 220 samples collected over 2008/9 and 2009/10, brucellosis and tuberculosis have not been found.
- The previously expanding bison range has decreased from 11,264 sq. km. to 4,155 sq. km. (Figures 2 and 3)
- Sustainable Resource Development has been able to direct hunter effort towards bison moving along the travel corridors along Highways 35 and 58.
- This hunt will be continued to manage numbers and distribution for as long as the disease threat persists.

Figure 2. Hay-Zama wood bison range expansion, as the population increased from 58 bison in 1994 to 652 bison in 2008.





**Figure 3. Hay-Zama wood bison range after two years of hunting. Red circle indicates range used in March 2010.**



## 2.0 East of Highway 35 Disease Surveillance and Risk Reduction

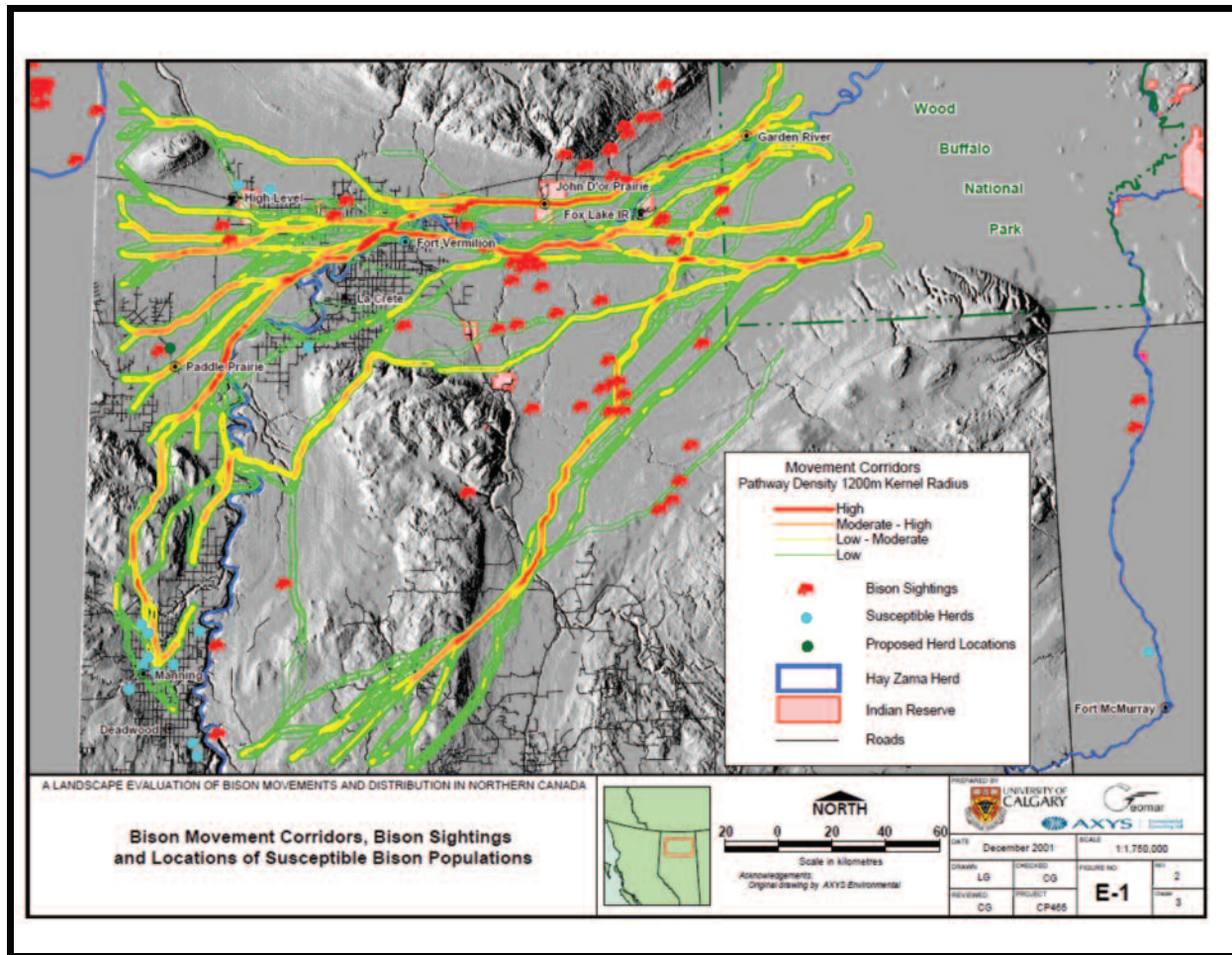
The probability of bison moving west from the Wentzel herd or from the populations in the Wabasca-Mikkwa area is high. Gates *et. al.* (2001) identified several routes that bison would likely use to move west (Figure 4). As well, bison from the Hay-Zama herd would most likely move east along these same routes. Most of the favourable travel routes pass through the agriculture zones in and around Ft. Vermilion and La Crete, and therefore pose the greatest threat to domestic livestock.

### 2.1 Detection Approach

**Objective** - To detect any wild bison on private agriculture lands near Ft. Vermilion and La Crete and the Agricultural and Highway 35 Surveillance Zones.

Surveillance areas have been identified along Highway 35 and around the Agricultural Zone. The Highway 35 Surveillance Zone stretches 10 km on both sides of Highway 35 from the High Level airport north to the Alberta - N.W.T.

**Figure 4. Bison movement corridors and bison sightings and locations of susceptible bison populations (from Gates *et. al.*, 2001).**



boundary (Figure 5). The Agricultural Zone contains farmland along Highway 58 from High level to Fort Vermilion and farmland in the La Crete – Fort Vermilion area (Figure 6). Ongoing reconnaissance flights will also explore associated areas that are potential movement corridors.

The purpose of the Highway 35 surveillance zone is to detect animals that: (i) may be moving from the east (high risk of infection) towards the Hay-Zama herd, or (ii) Hay-Zama animals (low risk of infection) moving from the west towards the high risk area (Figure 5). The purpose of the Agricultural Surveillance Zone is to detect bison that may be moving from known population areas in Wood Buffalo National Park, Wabasca-Mikkwa and Wentzel Lake areas (presumed infected).

### 2.1.1. Aerial surveillance flights

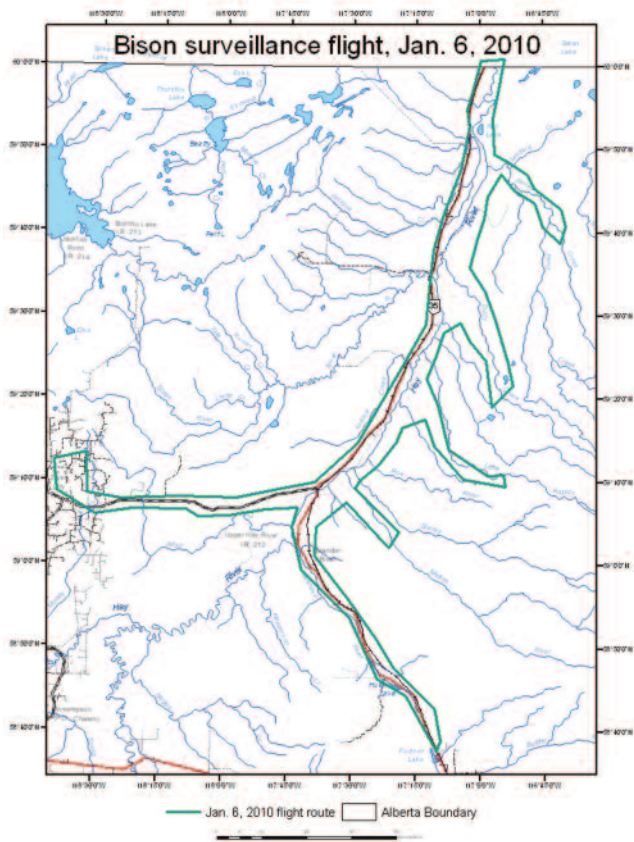
- Flights through both areas will be conducted at least four times each winter by Sustainable Resource Development staff.

### 2.1.2 Public Reporting

- Encourage client groups associated with government, as well as the general public, to report wood bison sightings in the surveillance zones.

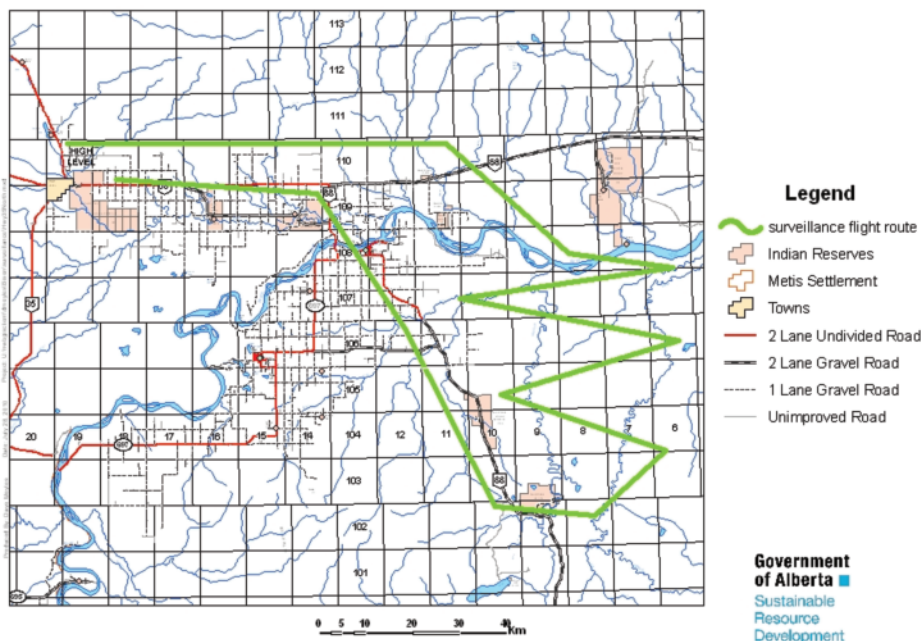


**Figure 5. Highway 35 Surveillance Zone.** The green line shows the typical aerial surveillance survey flight lines.



**Figure 6. Agricultural Area Surveillance Zone.** The survey route provides coverage of the possible bison movement corridors adjacent to farmland.

Aerial surveillance flight path for Fort Vermillion-La Crete area





### Update on surveillance program

- Extensive public communication/consultation took place in 2009/10 with respect to part of this initiative. Stakeholders and public were encouraged to report sightings of bison within a 10 km strip along either side of Highway 35. There appears to be a high level of public understanding and support for this undertaking. These efforts can be enhanced by focusing on the agricultural area and enlisting agricultural stakeholders and land owners and sustaining the initial effort along Highway 35.
- Beginning in 2009/10, regional staff initiated the aerial surveillance flights (during the winter) in both the Highway 35 and the Agricultural Surveillance Zones. No bison were observed during three flights.

## 2.2 Response Plan

**Objective** - To remove all wild bison detected on private agricultural lands near Ft. Vermilion and La Crete and in any of the Agricultural and Highway 35 Surveillance Zones. Wherever possible, meat should be salvaged and tissue samples for disease detection should be collected.

**2.2.1.** Response efforts will involve active removal by shooting and killing of any bison detected through surveillance activities. Tissue sampling and disease testing will be an integral component of these efforts.

**2.2.2** Sustainable Resource Development staff from High Level and Ft. Vermilion Districts will action bison reports. Reports outside normal office hours will be investigated through 1-800-624-3200. Government will engage aboriginals, hunters, outfitters, landowners, etc. to facilitate removal and salvage of meat where feasible and to ensure blood and tissue samples are collected and tested. Remote access by helicopter may be required in some instances.

### Update on response plan

In past years, there have been several instances of bison moving east along the Zama road and crossing Highway 35. For example, in November of 2007, four bulls were seen along the east side of Highway 35 just north of the junction with the Zama road. District staff directed a local hunter to the area and he shot two. Sustainable Resource Development surveyed the highway for several days but never saw sign of remaining bison. Staff suspected the other two bulls moved to the west of the highway. In late May, 2008, a group of 11 or 12 bison moved east of the highway in the vicinity of the junction of Highway 35 and the Zama Road. Locals from Zama shot four bison and non-resident hunters being guided by two outfitters killed another four bison. These bison were taken on the east side of the highway to the north of the junction. Staff searched for sign of the three or four other bison but could not find tracks or other sign.



## 3.0 Population monitoring plan east of Highway 35

The number of bison east of Highway 35, their movements and distribution over time is unknown and remains a significant factor in our assessment of disease risk. To our knowledge, most bison reside in two herds, referred to as the Wentzel and Wabasca-Mikkwa herds. This program proposes initiating a survey to estimate the entire bison population in Alberta outside Wood Buffalo National Park, then surveying every three years to assess population changes over time. As noted earlier with respect to the Hay-Zama population, herd size is an important risk factor. In addition, a program confirming the disease status of these herds will be needed before establishing long term goals and strategies for them. Currently, bison east of Highway 35 are offered no conservation protection.

### 3.1 Population Estimate and Distribution

**Objective** - To determine, with some precision, the numbers and distribution of wild bison in northern Alberta in areas surrounding Wood Buffalo National Park.

#### 3.1.1 Aerial Survey

The area outside of Wood Buffalo National Park has been divided into three areas to facilitate and prioritize bison surveys (Figure 7). We propose to survey all areas over a three-year period in order of priority, and then conduct monitoring surveys of each herd on a three-year cycle to evaluate size and distribution changes over time. There are no confirmed sightings of bison in Area 1, and it is assumed there is no resident population there. Area 2 encompasses the area where the Wabasca-Mikkwa bison herd resides and Area 3 encompasses the area where the Wentzel bison herd resides. Portions of Area 3 are in the Caribou Mountains Wildland Park. Area 2 was surveyed in 2010 and a summary report was completed.

#### 3.1.2 Public reporting

Encourage the public, bison hunters, trappers and outfitters, First Nation bands and aboriginal harvesters to report bison sightings and local knowledge regarding preferred habitat use and seasonal movements in each of the three areas.

### 3.2 Disease status of bison outside of Wood Buffalo National Park

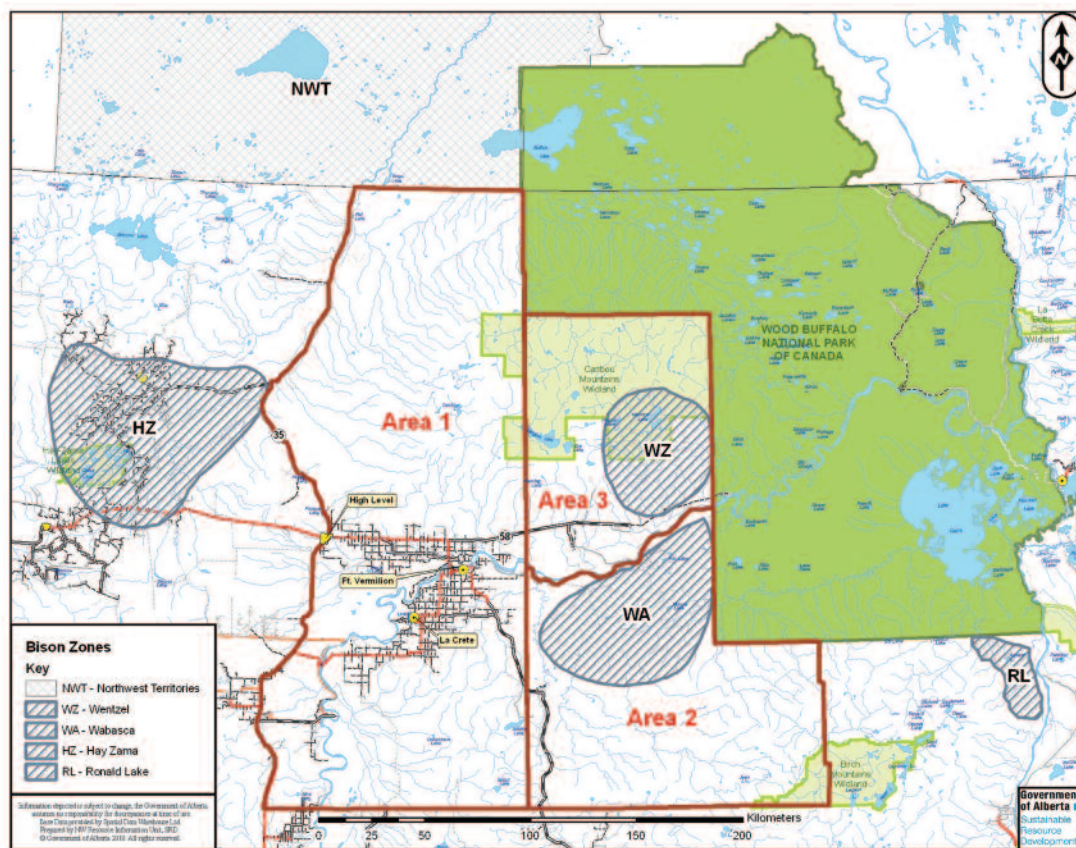
**Objective** - To determine the disease status of bison in northern Alberta to the west and south-east of Wood Buffalo National Park.

Data on the prevalence of brucellosis and tuberculosis in the outlier herds (Wentzel and Wabasca-Mikkwa) is incomplete and inconclusive. There is no data concerning rates of infection in the Ronald Lake herd to the south-east of Wood Buffalo National Park, which is reported to be growing and ranging farther south. However, outlier herds are assumed to be associated with bison from the park, which are known to harbour these diseases. Bison east of Highway 35 are assumed diseased and have been classified as non-wildlife. As a result, they are not protected and can be hunted year round except in the Caribou Mountains Wildland Provincial Park. Alberta Health issued a public advisory for the area years ago, urging caution for people handling, processing and consuming potentially diseased bison. Regardless of their status, the proximity to the parent Wood Buffalo National Park disease reservoir puts all outlier herds at a high risk of infection.

To ultimately assess the risk of disease transmission to livestock and disease-free wild bison and to plan surveillance and containment programs in the future, efforts will be made to determine the disease status for each outlier herd. The Government of Alberta will undertake disease sampling.



Figure 7. Aerial survey areas for bison population estimates



However, if the opportunity presents itself through the ongoing harvest of bison by hunters in the area, the GOA will test bison samples collected voluntarily. The GOA will not actively seek these sampling opportunities, however, if people disclose that they are harvesting bison and are willing to collect the required samples; the GOA will use this opportunity to gather disease information. Hunters will be supplied with a limited number of sampling kits and be provided with information on the two diseases suspected to be in the bison so that the risks can be assessed and the proper precautions can be taken.

### 3.2.1. Disease sampling

The proposed disease sampling is a phased approach, with each progressive phase increasing in cost, statistical precision and sample size. Bison

will be salvaged opportunistically where interested individuals and ground access is available. The disease testing program for a given herd will be terminated as soon as one of the two diseases (bovine tuberculosis or brucellosis) is detected. The herd will be ranked as diseased. The disease sampling is based on the following assumptions:

- That outlier herds have similar prevalence of bovine tuberculosis or brucellosis to that occurring in Wood Buffalo National Park (40 to 50 per cent)
- That it may take small sample sizes to detect disease presence if it is at high prevalence.
- Detection of either disease is enough for our needs to classify a bison herd as diseased.

**Phase one** – Phase one will use Government or contract collection of two to four animals from each herd for each year the program runs. Government/contract collection will focus on sampling older bulls wherever possible. With potentially high prevalence, we may be able to establish disease status in one or two years. This phase will run no more than three years.

**If there are no diseased bison detected in phase one, Government will evaluate the option of implementing higher precision sampling phases.**

Note: Genetic material will be archived for each bison sample to support any investigations into the origin of these populations.

## 4.0 Public and Aboriginal Review

Alberta government will focus at the local level to inform and seek feedback from the public, stakeholders and local aboriginal people on the approach for managing disease risk.

An information letter and fact sheet summarizing the approach will be the primary mode of communication. The fact sheet will reference a web link to [www.mywildalberta.com](http://www.mywildalberta.com), where a copy of the report “Managing disease risk in *Alberta's Wood Bison with Special Focus on Bison to the West of Wood Buffalo National Park*” will be posted.

## 5.0 Reporting

An annual report will be submitted each year to summarize the year's activities with respect to managing the risk associated with diseased bison in Alberta. The report will focus on program objectives, whether they are being achieved or not, identifying current issues and making recommendations for improvements.

## 6.0 Literature Cited

Gates, C. C., J. Mitchell, J. Wierzchowski and L. Giles. 2001. A Landscape Evaluation of Bison Movements and Distribution in Northern Canada. AXYS Environmental Consulting Ltd. 115 pp.