SUBMISSION TO THE

NUNAVUT WILDLIFE MANAGEMENT BOARD

FOR

Information: X **Decision:**

Issue: Central and Northern Kivalliq Muskox Survey Results and Total Allowable Harvest Recommendations

Background:

Prior to the enactment of protection in 1917 (Burch, 1977), muskox sub-populations throughout the central Arctic were hunted to near extirpation. Muskox sub-populations throughout Nunavut are currently re-colonizing much of their historical range, but there remain gaps of information on the status of muskox sub-populations in much of the eastern Mainland (Fournier and Gunn, 1998). At its greatest extent the distribution and abundance of muskox in the Kivalliq region of Nunavut have occurred within an area extending south of Latitude 66^0 north, west to the NWT/Thelon Game Sanctuary boundaries, east to the Hudson Bay coast line and south to the Manitoba border. Distribution and abundance of muskox within the Kivalliq reliably occurs within a slightly smaller geographic area that has been expanding for over 50 years. Some of the early management zones, reflecting muskox distribution of the time are shown in Figure 1. Kivalliq muskox sub-populations were last estimated using fixed-width line transect surveys in July of 1985, July 1986, July 1991, and July 1999. By 2010 concern was raised over the ten year lapse of information coupled with hunter's observations of muskox closer to communities. A re-evaluation of the muskox status for this region was conducted in July 2010 and 2012. Based on these most recent survey results, muskox numbers within the central and northern Kivalliq region have steadily increased.

Based on the results derived from strip transect quantitative methods, total allowable harvests for the 2 sub-populations of muskox within the Kivalliq region (one north of the Thelon/Chesterfield Inlet waterways (Northern Kivalliq - MX/17) and the second south (Central Kivalliq – MX/18) are currently based on 5% of the estimated adult muskox population (lower 95% confidence limit). At present within the Nunavut Wildlife Act Regulations a total allowable harvest of 42 is recommended for MX/17 and 182 indicated for MX/18 (Figure 2).

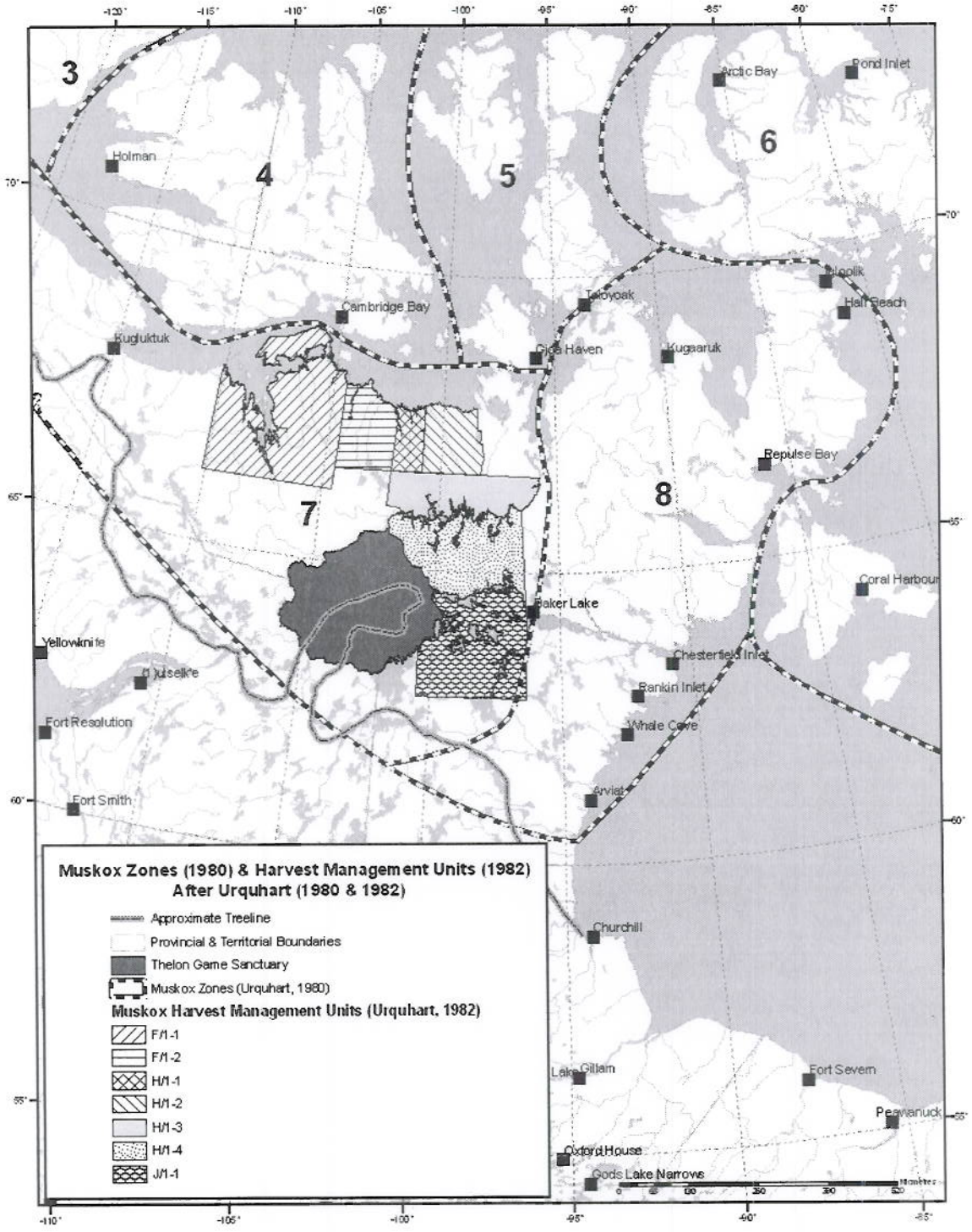

Figure 1 *Early muskox management zones used to promote range expansion. During these periods muskox were scarace outside of indicated zones.*

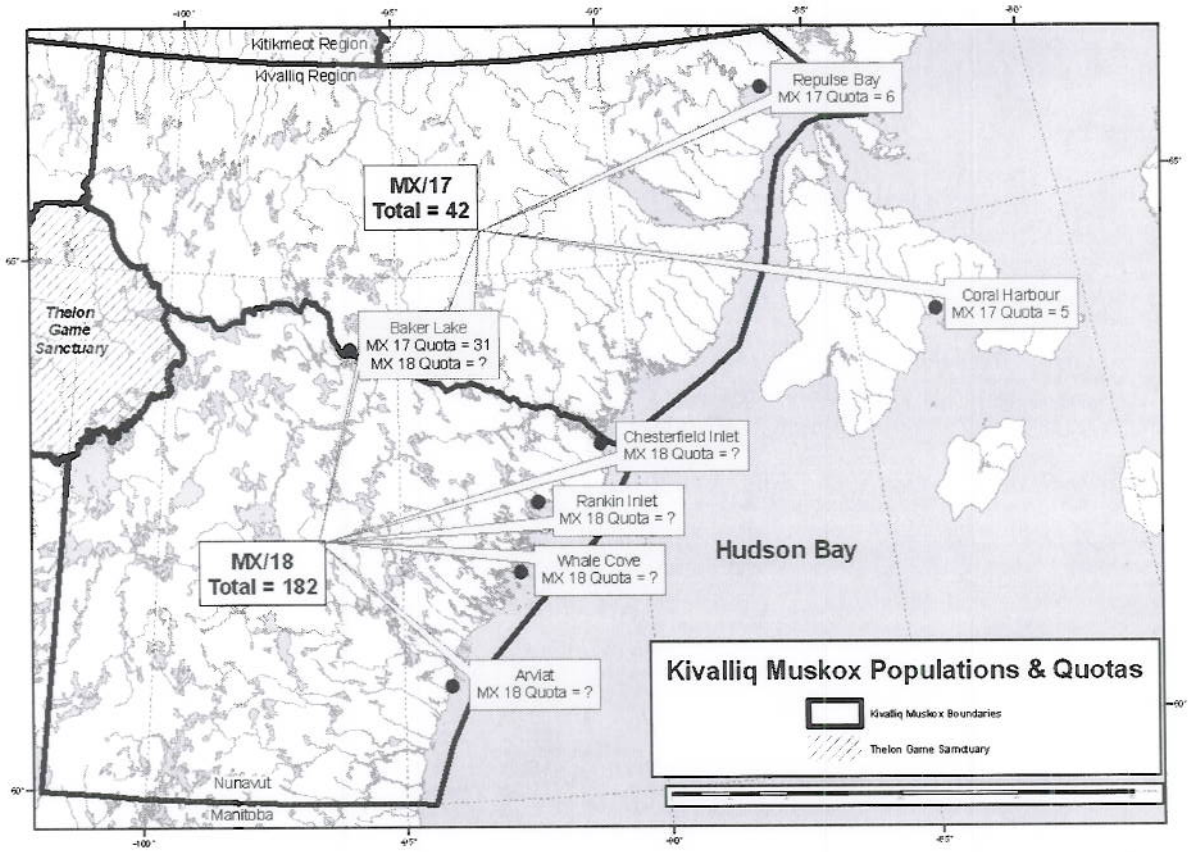

Figure 2 The Northern (MX/17) and Central (MX/18) muskox subpopulations and associated quotas based on the current 2012/13 exemption permit..

Current Status

Central Kivalliq Muskox Survey

Initial July 2010 survey findings show an increase in the number of muskox within the central Kivalliq Muskox sub-population from July 1999 findings (Figure 3). The 2010 estimate clearly displayed an increase from July 1999 which in turn showed an increase of 1,325 to 2,041 muskox (lower and upper 95% confidence limits) within the area south of Chesterfield Inlet/Thelon River and west to the NWT/Thelon Game Sanctuary boundaries from the number estimated in 1991 (Figure 3).

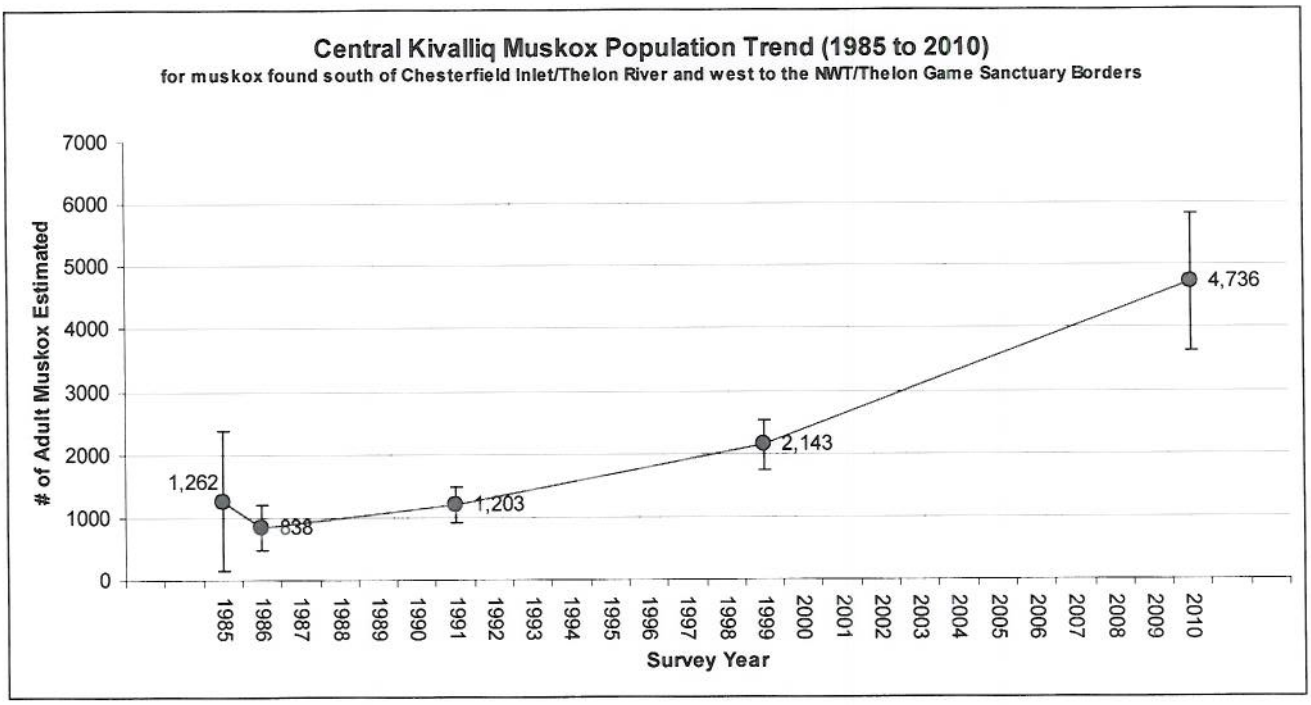

Figure 3 The trend of the central Kivalliq Muskox Population from 1985 through July 2010.

Northern Kivalliq Muskox Survey

Results of the 2012 northern Kivalliq muskox survey are still in the analysis stage but clearly indicate an increase from the July 1999 abundance estimates (Figure 10). Initial estimates show the northern Kivalliq muskox population to have increased from an estimated 1,522 (SE = 331; CV = 0.22) in July 1999 to 2,341 (SE = 275; CV = 0.12) in July 2012. As with the central Kivalliq population, survey observations (Figure 11) also suggest an expansion in the subpopulations geographic distribution eastward (Figure 8).

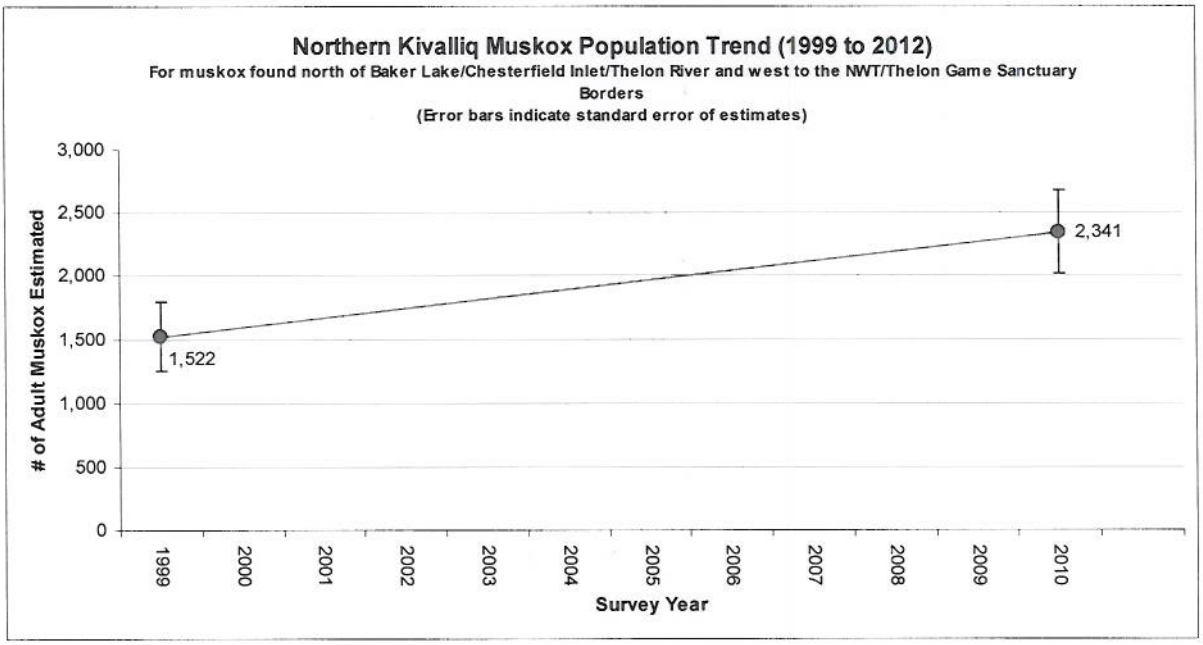

Figure 10 Trends of muskox abundance within the northern kivalliq subpopulation, July 2012.

Management Findings/Actions/Recommendations

Central Kivalliq Muskox Sub-population

1. The central Kivalliq muskox subpopulation (MX/18) has continued to expand outside of previously documented distributions, particularly to the south (towards the Manitoba Border) and eastward (to the coast of the Hudson Bay);

2. A management plan was developed in 2010 by the Kivalliq Wildlife Board, NTI and GN DoE. The management plan utilizes the results of abundance surveys to help guide management actions and recommendations.

3. The Central Kivalliq Muskox sub-population has increased from 2,501 +/- 642 (95% CI) adult muskox in July 1999 to 4,736 +/- 1,099 (95% CI) in July 2010 (Figure 6 & 12).

4. Utilizing a harvest ratio of 5% estimated to foster stability and based on the estimated calf crop, we recommend the central Kivalliq muskox sub-population TAH (Total Allowable Harvest) be increased from 93 to 182 muskox.

5. We also recommend that all NQL (Non Quota Limitations) for the central Kivalliq sub-population of muskox be removed as there is currently no conservation issue that would benefit from these measures.

6. To improve TAH recommendations and overall management, additional muskox research should also focus on barren-ground grizzly bear abundance, distribution and feeding behavior and their effects on muskox behaviour and ecology.

7. The central Kivalliq muskox sub-population (MX/18) boundaries should remain as indicated (Figure 12).

Northern Kivalliq Muskox Sub-population

The DoE is scheduled to meet with the KWB to discuss survey results in March 2013. During this meeting proposed TAHs will be discussed.

1. The Northern Kivalliq muskox sub-population (MX/17) has continued to expand outside of previously documented distributions, particularly eastward along the north shore of Chesterfield Inlet.

2. A management plan was developed in 2010 by the Kivalliq Wildlife Board, NTI and GN DoE. The management plan utilizes the results of abundance surveys to help guide management actions and recommendations for Kivalliq muskox populations.

3. The Northern Kivalliq Muskox sub-population has increased from 1,522 +/- 679 (95% CI) adult muskox in July 1999 to 2,341 +/- 545 (95% CI) in July 2012 (Figure 10 &12).

4. Utilizing a harvest ratio of 5% estimated to foster stability and based on the estimated calf crop, we recommend the northern Kivalliq muskox sub-population TAH (Total Allowable Harvest) be increased from 42 to 90 muskox.

5. We also recommend that all NQL (Non Quota Limitations) for the northern Kivalliq sub-population be removed as there is currently no conservation issue that would benefit from these measures.

6. To improve TAH recommendations and overall management, additional muskox research should also focus on barren-ground grizzly bear abundance, distribution and feeding behavior and their effects on muskox behaviour and ecology.

7. The northern Kivalliq muskox sub-population (MX/17) boundaries should be modified along its northern boundary.