



# Keeyask Generation Project Environmental Impact Statement

## Supporting Volume Terrestrial Environment



June 2012



File Location: Z:\Workspaces\Keeyask\_GS\Support\Mammals\GIS\Map - Mammal surveys for beaver lodges Fall 2011.apr  
 B:\GIS\ITD\_Landcover - Dec 2011



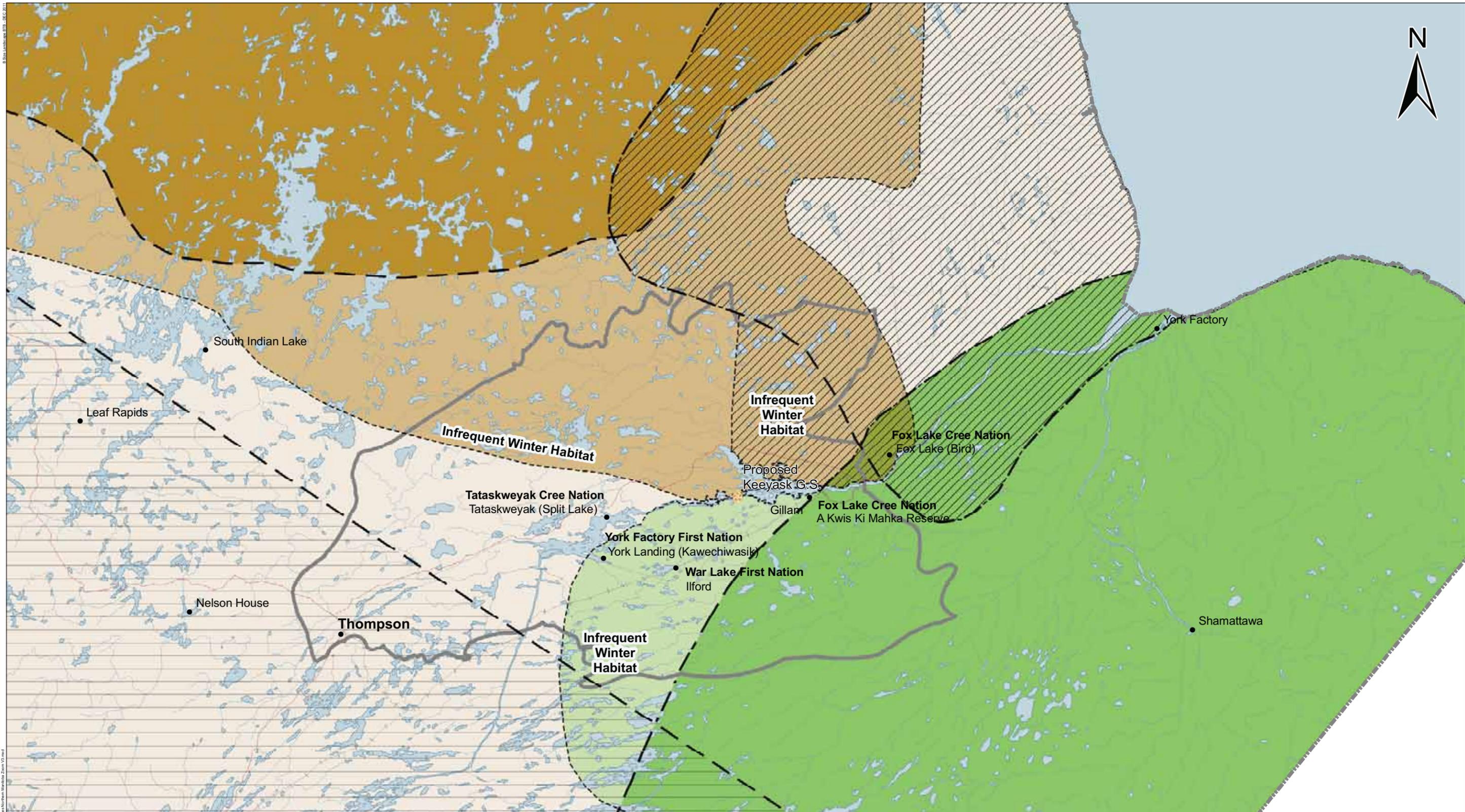
<b>DATA SOURCE:</b> Study areas and Nelson River shoreline - ECOSTEM Ltd.; Survey data - WRCS; Water - NTS; Roads and rail - Manitoba Conservation.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-APR-12	<b>REVISION DATE:</b> 24-APR-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

- Legend**
- Active and Inactive Beaver Lodge Locations**
- + Active Lodge
  - + Inactive Lodge

- Study Areas**
- Study Zone 1
  - Beaver Local Study Area
  - Beaver Regional Study Area

## Beaver Lodges

Fall 2011

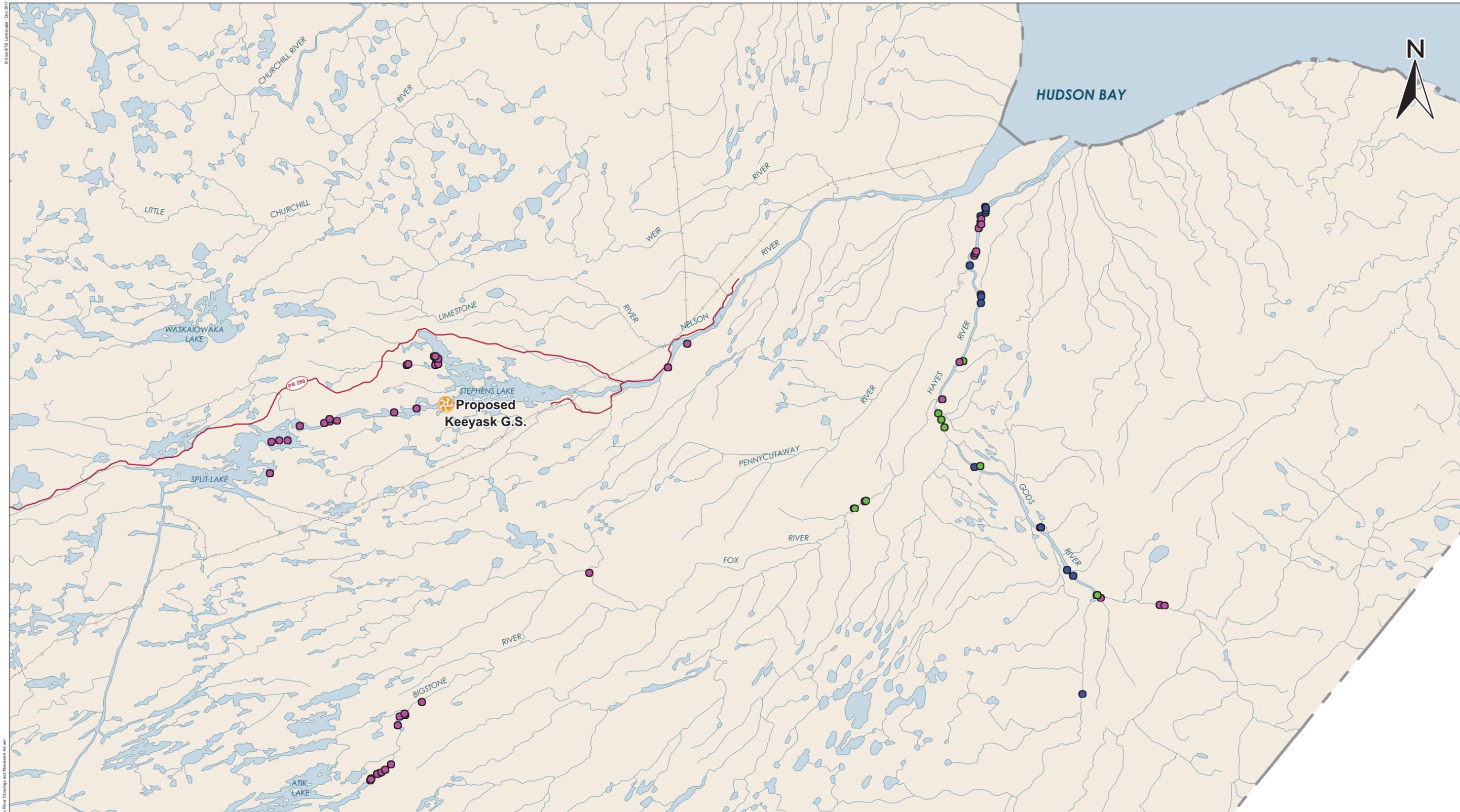


<b>DATA SOURCE:</b> Study areas - ECOSTEM Ltd.; Caribou ranges - Manitoba Conservation and Water Stewardship; Extended caribou habitat - Thompson and Abraham 1994, Beverly Qamanirjuaq Management Board, WRCS field studies/professional judgement; Roads, water and rail - NTS.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 23-MAR-12	<b>REVISION DATE:</b> 18-MAY-12
<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED	

<b>Legend</b>			
<b>Provincial Caribou Ranges (Manitoba Conservation and Water Stewardship)</b>			
	Coastal - Cape Churchill		Barren Ground (Qamanirjuaq)
	Coastal - Pen Islands		Boreal Woodland Caribou
<b>Extended Infrequent Winter Caribou Habitat</b>			
	Coastal - Cape Churchill Infrequent Winter Habitat		Coastal - Pen Islands Infrequent Winter Habitat
	Barren Ground (Qamanirjuaq) Infrequent Winter Habitat		
Note: Extended habitat estimated from WRCS field studies (2001-2011) and Beverly Qamanirjuaq Management Board data.			

<b>Study Areas</b>	
	Caribou Regional Study Area

# Caribou Ranges



B:\Site\ITD\Landcover - Dec 2011  
 File Location: Z:\Waskaiowaka\Keeyask\_GS\Support\Mammal\GIS\Map - Caribou River Crossings and Movement A1.wor

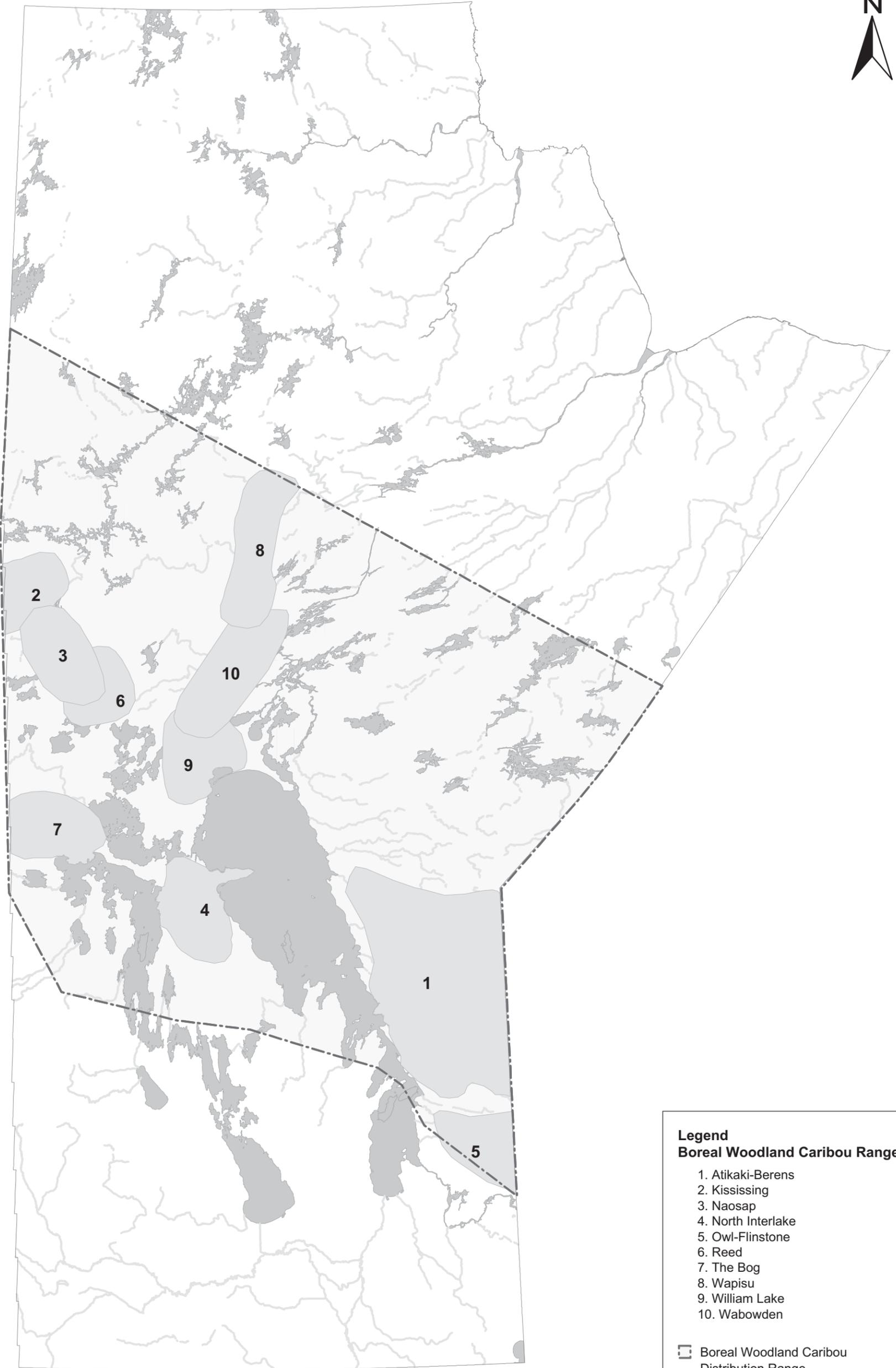


<b>DATA SOURCE:</b> Caribou crossings - WRCS; Water - NTS; Roads and rail - Manitoba Conservation		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-APR-12	<b>REVISION DATE:</b> 24-APR-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

**Legend**  
**Caribou River Crossings by Season**

- Fall
- Spring
- Winter

## Caribou River Crossings



**Legend**  
**Boreal Woodland Caribou Ranges**

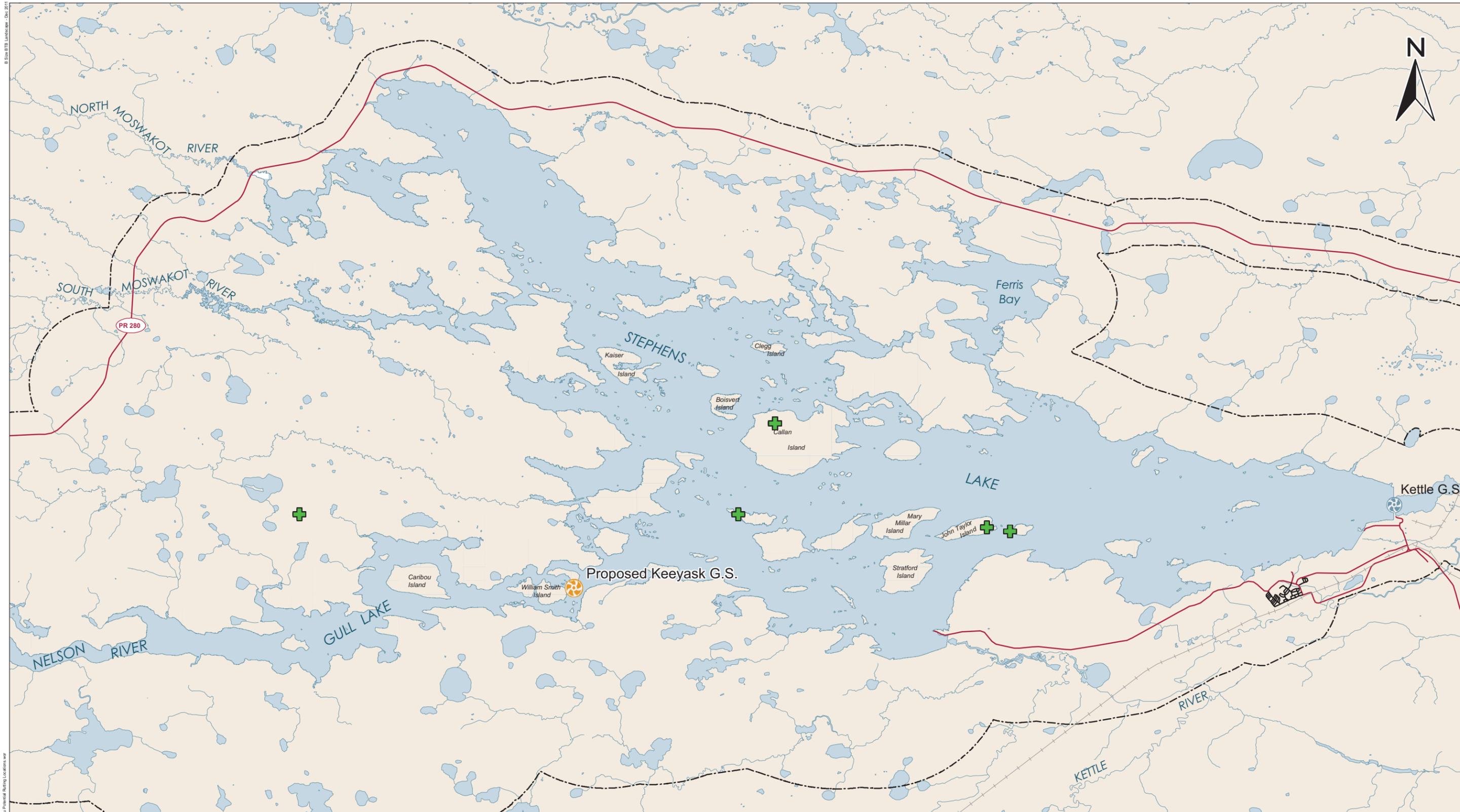
1. Atikaki-Berens
2. Kississing
3. Naosap
4. North Interlake
5. Owl-Flinstone
6. Reed
7. The Bog
8. Wapisu
9. William Lake
10. Wabowden

 Boreal Woodland Caribou Distribution Range

<p><b>DATA SOURCE:</b> Caribou ranges - Manitoba Conservation; Water - NTS</p>		
<p><b>CREATED BY:</b> ECOSTEM Ltd.</p>		
<p><b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z14N</p>	<p><b>DATE CREATED:</b> 16-APR-12</p>	<p><b>REVISION DATE:</b> 16-APR-12</p>
<p>0 50 100 Kilometres 0 25 50 Miles</p>	<p><b>VERSION NO:</b> 1.0</p>	<p><b>QA/QC:</b> APPROVED</p>



## Woodland Caribou Ranges in Manitoba



B:\Site\ITD\_Landuse - Dec 2011  
 File Location: Z:\Workspaces\Keeyask\_GS\Support\Mammals\IEIS\Map - Caribou Potential Rutting Locations.sxd

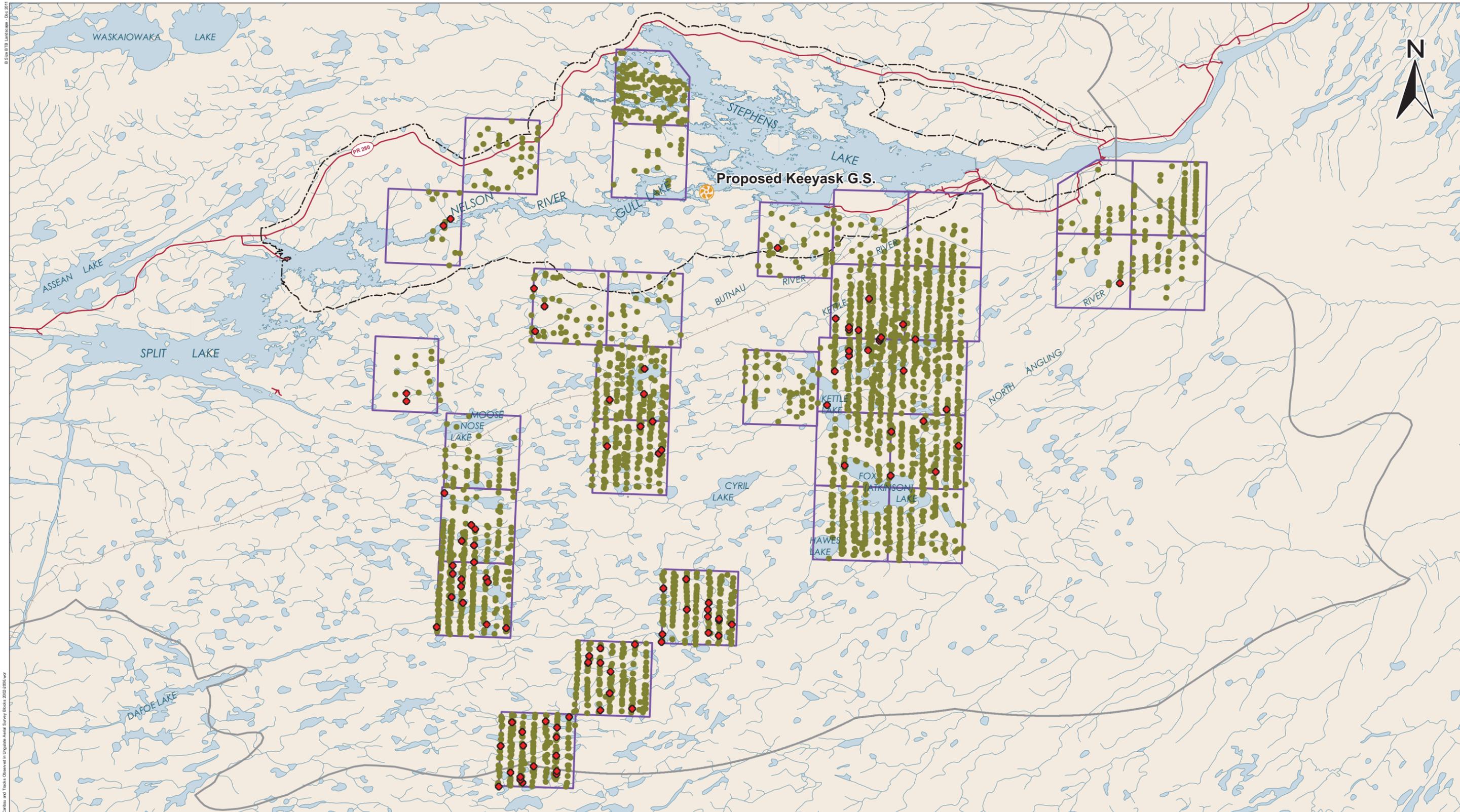


<b>DATA SOURCE:</b> Study areas and Nelson River shoreline - ECOSTEM Ltd.; Potential rutting locations - WRCS; Roads and rail - Manitoba Conservation; Water - NTS.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-MAY-12	<b>REVISION DATE:</b> 24-MAY-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

- Legend**
- Potential Caribou Rutting Locations**
- Potential Rutting Location
- Study Areas**
- Caribou Local Study Area

- Infrastructure**
- Highway
  - Local Street
  - Rail
  - Proposed Keeyask G.S.

## Potential Caribou Rutting Locations



B:\Bios\BTD\Unk\Unk\Map 7-25-14\_Caribou and Tracks Observed in Ungava Aerial Survey Blocks\_2002-2006.mxd  
 File Location: Z:\Waskaiowaka\Keeyask\_GS\Support\Mammals\IEIS\Map 7-25-14\_Caribou and Tracks Observed in Ungava Aerial Survey Blocks\_2002-2006.mxd



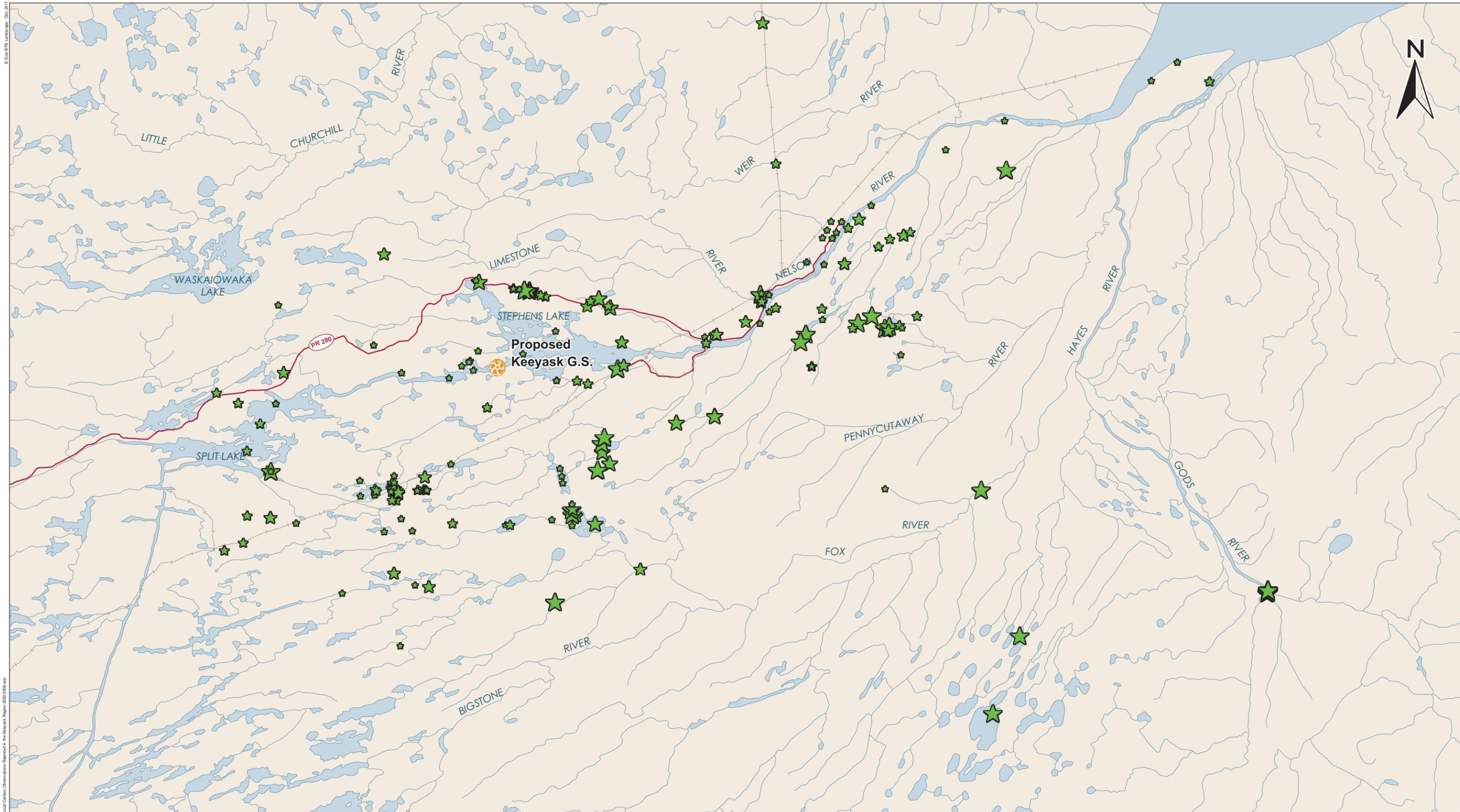
<b>DATA SOURCE:</b> Study areas and Nelson River shoreline - ECOSTEM Ltd.; Survey data - WRCS; Water - NTS; Roads and rail - Manitoba Conservation.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 25-APR-12	<b>REVISION DATE:</b> 25-APR-12
		<b>VERSION NO.:</b> 1.0
<b>QA/QC:</b> APPROVED		

- Legend**
- Observed Caribou and Tracks**
- ◆ Observed Caribou
  - Observed Tracks
  - Aerial Survey Block

- Study Areas**
- Caribou Local Study Area
  - Caribou Regional Study Area

## Caribou and Tracks Observed

### During Aerial Surveys 2002-2006



B:\Site 8170\_Landmark - Dec 2011  
 File Location: Z:\Workspaces\Keeyask\_GS\Support\Memo\GIS\Map 7-26\_Local Caribou Observations Reported in the Keeyask Region 2002-2006.w



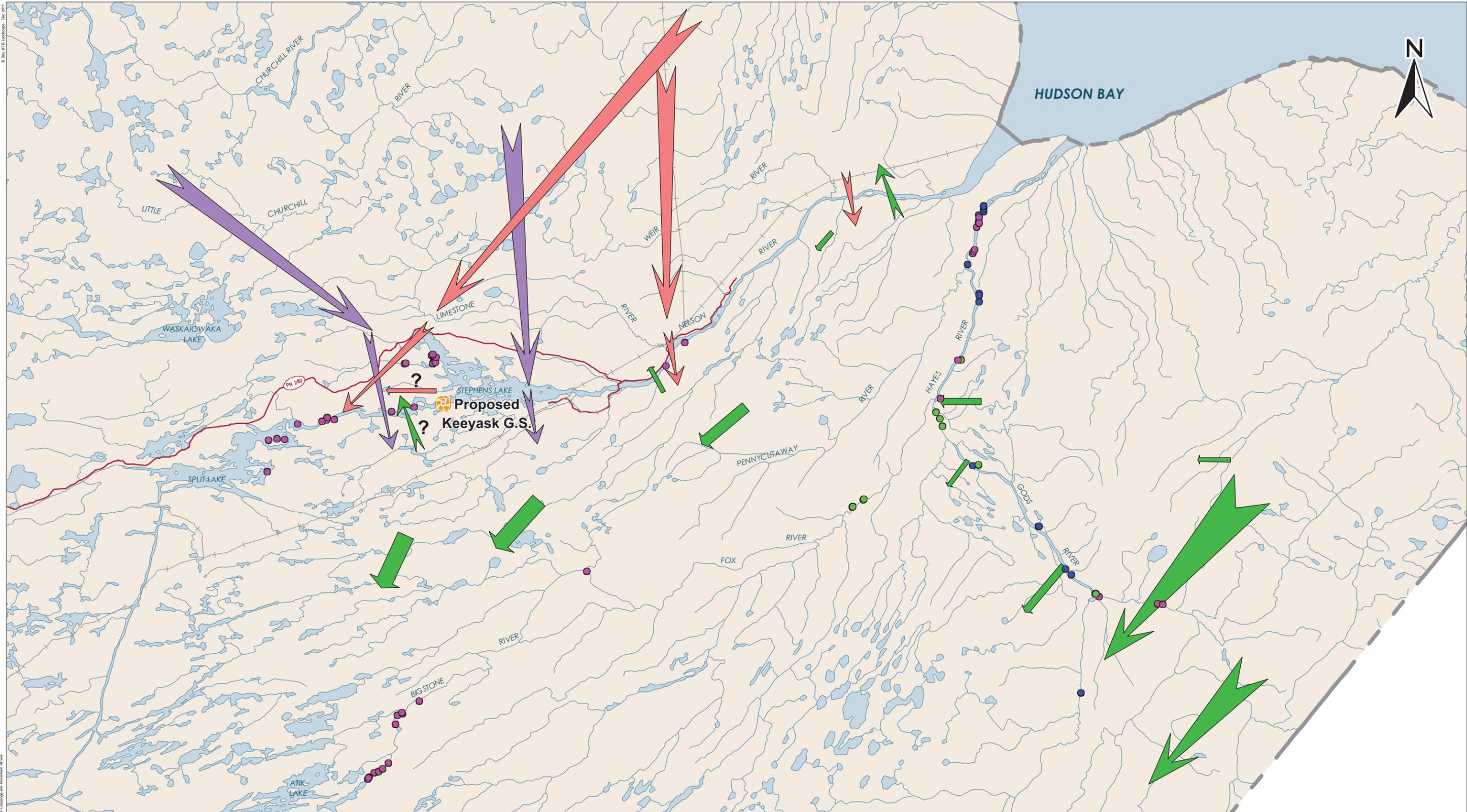
<b>DATA SOURCE:</b> Caribou data - WRCS; Water - NTS; Roads and rail - Manitoba Conservation.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-APR-12	<b>REVISION DATE:</b> 24-APR-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

**Legend**  
**Local Knowledge Caribou Number of Individuals (Number of Observations)**

	1 to 5 (85)		51 to 200 (14)
	6 to 20 (45)		201 and Up (32)
	21 to 50 (29)		

## Local Caribou Observations

Reported in the Keeyask Region  
2002-2006



B:\BIB\BIB\Map\Map - Caribou River Crossings and Movement Atwor  
 File Location: Z:\Waskaiowaka\Keeyask G.S.Support\Map\Map - Caribou River Crossings and Movement Atwor

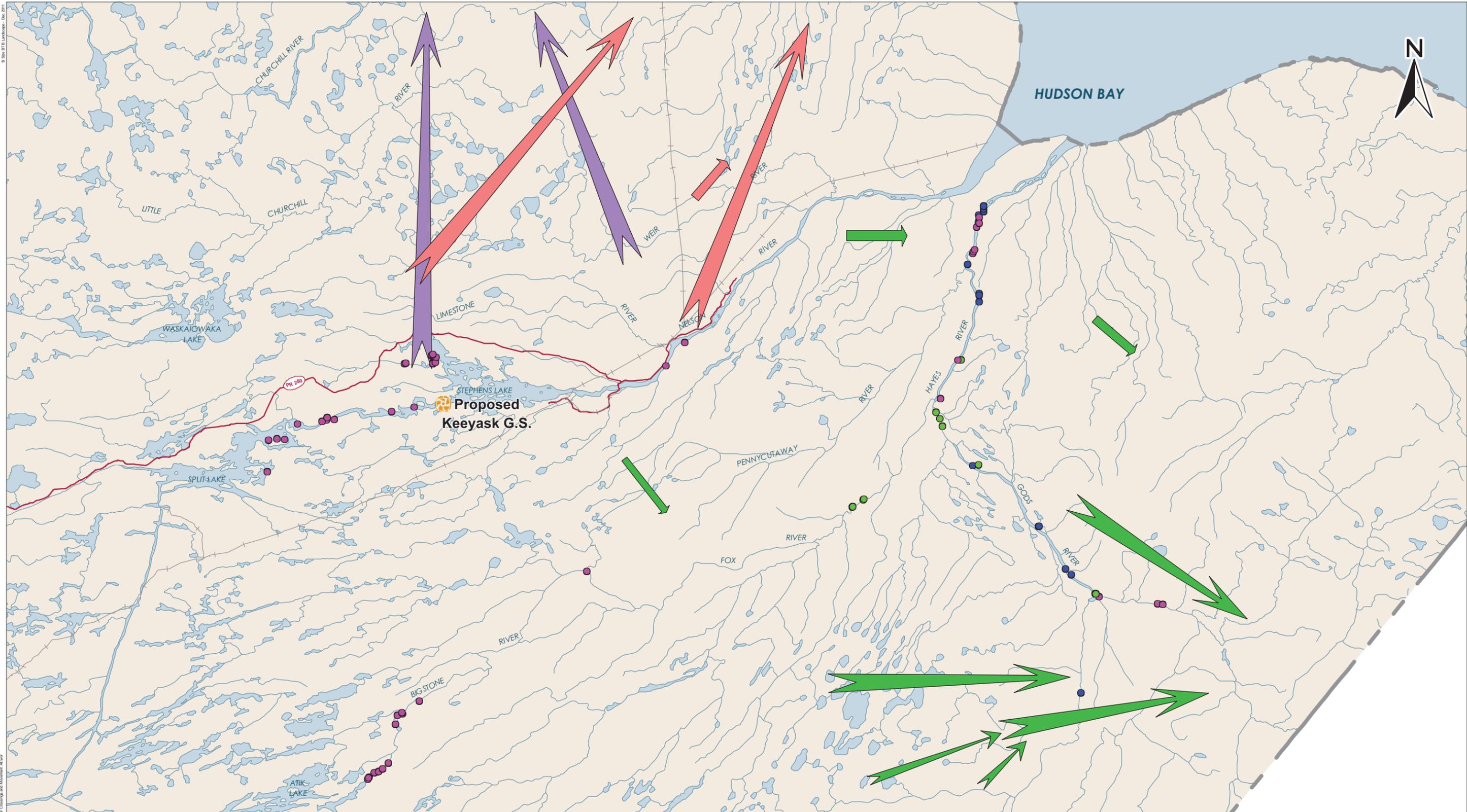


<b>DATA SOURCE:</b> Caribou crossings and movement - WRCS, Manitoba Conservation, Thompson and Abraham 1994, Beverly Qamanirjuaq Management Board; Water - NTS; Roads and rail - Manitoba Conservation.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-APR-12	<b>REVISION DATE:</b> 24-APR-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

- Legend**
- River Crossings By Season**
- Fall
  - Spring
  - Winter
- General Caribou Movement by Herd and Season (Reports)**
- Cape Churchill Fall-Early Winter
  - Pen Islands Fall-Early Winter
  - Barren Ground Fall-Early Winter
- \* Width of arrows indicates the relative amount of caribou observed

- General Caribou Movement by Herd and Season (Aerial Surveys)**
- Cape Churchill Early and Mid-Winter
  - Pen Islands Early and Mid-Winter
- ? Uncertain if these are Pen Islands or Cape Churchill caribou

## Caribou Movement in Early Winter



B. Shaw BTL Inc. / Revision: Dec 2011  
 File Location: Z:\Waskaiowaka\Keeyask G.S Support\Map\Map - Caribou River Crossings and Movement Atwor

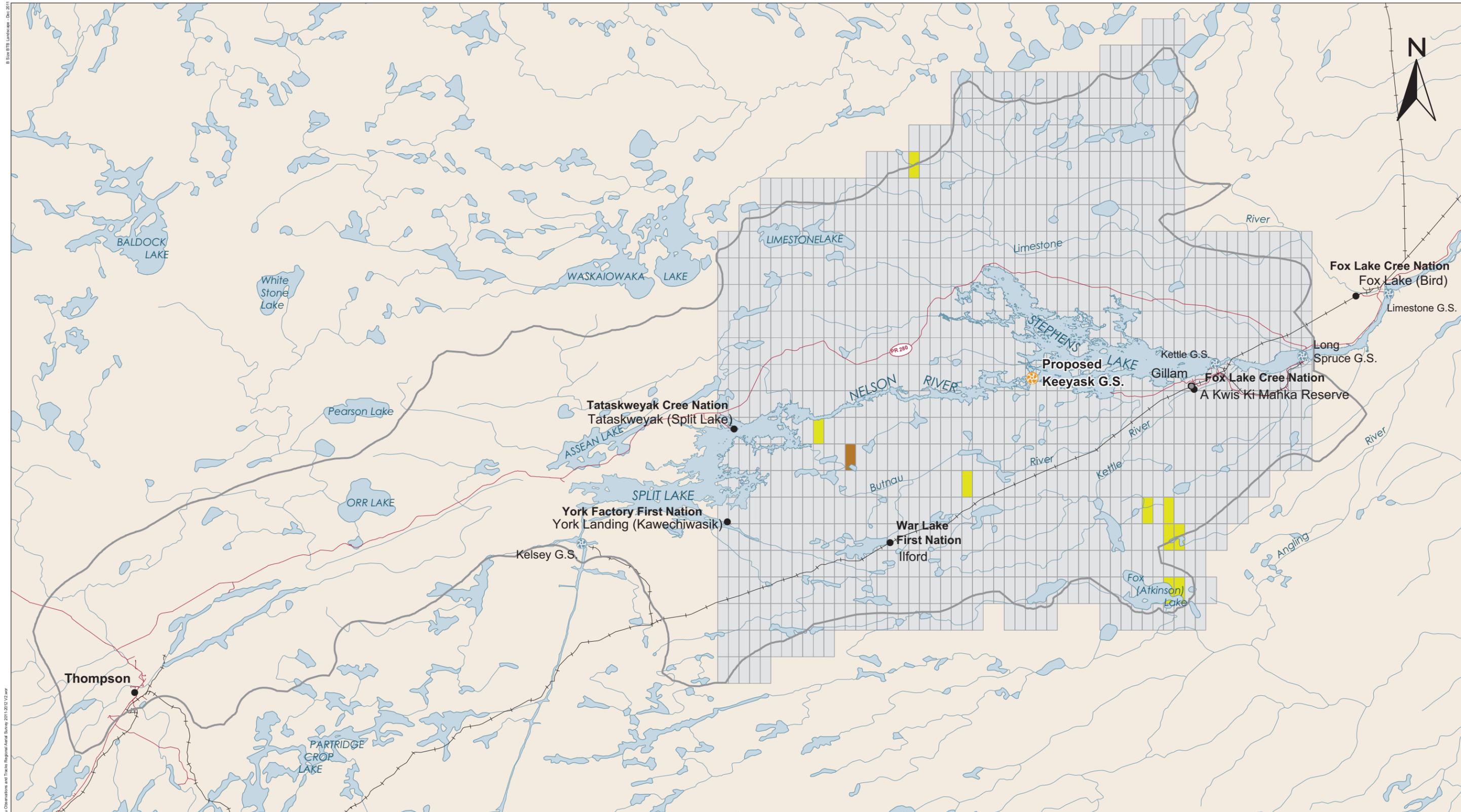


<b>DATA SOURCE:</b> Caribou crossings and movement - WRCS, Manitoba Conservation, Thompson and Abraham 1994, Beverly Qamanirjuaq Management Board; Water - NTS; Roads and rail - Manitoba Conservation.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 24-APR-12	<b>REVISION DATE:</b> 24-APR-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

- Legend**
- River Crossings By Season**
- Fall
  - Spring
  - Winter
- General Caribou Movement by Herd and Season (Reports)**
- Cape Churchill Late Winter-Spring
  - Pen Islands Winter-Spring
  - Barren Ground Late Winter-Spring

- General Caribou Movement by Herd and Season (Aerial Surveys)**
- Cape Churchill Late Winter
  - Pen Islands Late Winter
- \* Width of arrows indicates the relative amount of caribou observed

## Caribou Movement in Late Winter



B:\Site\ITD\_Landuse - Dec 2011  
 File Location: Z:\Workspaces\Keyask\_GIS\Support\Mammal\IEIS\Map - Caribou Observations and Tracks Regional Aerial Survey 2011-2012\_V2.mxd



<b>DATA SOURCE:</b> Study areas and Nelson River shoreline - ECOSTEM Ltd.; Observed tracks - WRCS; Roads - Manitoba Conservation; Water and rail - NTS.		
<b>CREATED BY:</b> ECOSTEM Ltd.		
<b>COORDINATE SYSTEM:</b> UTM NAD 1983 Z15N	<b>DATE CREATED:</b> 13-APR-12	<b>REVISION DATE:</b> 28-MAY-12
	<b>VERSION NO.:</b> 1.0	<b>QA/QC:</b> APPROVED

**Legend**

**Frequency of Observed Caribou Tracks**

Zero
  Low
  Medium or High

**Study Areas**

Study Zone 5

## Caribou Tracks Observed During Aerial Survey

December 2011