GEOHAZARD ASSESSMENT PROGRAM

NORTH CENTRAL REGION – ATHABASCA

2012 INSPECTION

Site Number	Location	Name	Hwy	km
NC 58	6.5 km west of the junction between Hwy 881 and 858 to the north of Lac La Biche	**NORTH OF LAC LA BICHE**	858:02	45.85
Legal Description		**UTM Co-ordinates (NAD 83)**		
SW- 30-68-13-W4M		12 N 6085029	E 436771	

	Date	PF	CF	Total
Previous Inspection:	May 28, 2010	13	4	52
Current Inspection:	June 13, 2012	9	3	27
Road AADT:	260		**Year:**	2011
Inspected By:	Tarek Abdelaziz, Don Proudfoot (Thurber) Roger Skirrow, Calvin Kissel, Arthur Kavulok, Jake Knudslein (TRANS)			
Report Attachments:	☑ Photographs ☑ Plans ☐ Maintenance Items			

Primary Site Issue:	An active landslide occurred after a heavy rainfall event, causing severe pavement distress on the eastbound lane of the highway	
Dimensions:	About 80 m along the highway and 30 m perpendicular to the highway centerline	
Date of any remediation:	The remedial measure, completed in July 2011, involved the construction of a 90 m long pile wall to retain the landslide mass. The pile wall consisted of 15 m long driven steel H piles (HP 310x110 piles), installed at a center-to-center spacing of 0.62 m.	
Maintenance:	ACP patch was placed on the eastbound lane of the highway in July 2011 after construction completion	
Observations:	**Description**	**Worse?**
☑ Pavement Distress	10 mm dip in the highway EBL surface by the west end of the site;	☐
☑ Slope Movement	5 mm wide reflective cracks with 5 to 10 mm differential heights in the eastbound lane surface; 5 mm wide cracks on the westbound lane surface	☐
☐ Erosion		☐
☐ Seepage		☐
☐ Bridge/Culvert Distress		☐
☑ Other	Growing vegetation on the south side of the highway	☐

Instrumentation: (5 PNs)

The slope inclinometers installed at this site were sheared off prior to the implementation of the remedial measure. At present, there are five operational pneumatic piezometers, which were not read after construction completion.

Assessment (Refer to attached Figure)**:**

The site observations indicated that the implemented remedial measure has been effective in stabilizing the landslide mass. Existing landslide reflective cracks on the highway eastbound lane are indicative of the progressive lateral deflection of the pile wall. Further opening of reflective cracks should be anticipated over time until the pile wall mobilizes the full magnitude of the landslide stabilizing force.

The existing soil and groundwater conditions are similar on both sides of the highway and therefore the cracks appeared in the westbound lane of the highway could be indicative of a new landslide developing on the north side of the highway.

Recommendations:

This site should be visited again to conclude the effectiveness of the repair measure and undertake a more detailed inspection of the terrain downslope of the westbound lane for signs of slope stability issue.

In the short term, the MCI should seal any open cracks on the highway lanes, and watch closely for new cracks and extension of existing cracks on both lanes, and in particular any drop across the cracks on the highway westbound lane. It is anticipated that the highway will need to be patched again within the next couple of years.

If future site observations confirm the presence of a landslide at the north side of the highway, a remedial measure similar to the one implemented at the south side of the highway could be considered. The ballpark cost of a pile wall could be in the range of $550,000. Prior to the design of a remedial measure, consideration should be given for installing slope inclinometers on the north side of the highway to confirm the depth of movement (if any).