

GEOHAZARD ASSESSMENT PROGRAM

PEACE RIVER / HIGH LEVEL AREA

2015 INSPECTION



Site Number	Location	Name	Hwy	km
PH68	North of Town of Peace River	Bogey and Double Bogey Landslides	743:02	Approx. 3.6
Legal Description		UTM Co-ordinates		
12-84-22-5		11V N 6235659		E 478510

	Date	PF	CF	Total
Previous Inspection:	June 10, 2014	4	4	16 Bogey Slide
		13	2	26 Double Bogey Slide
Current Inspection:	June 10, 2015	4	4	Bogey Slide
		13	2	Double Bogey Slide
Road AADT:	3280	Year:		2014
Inspected By:	(Don Proudfoot, Thurber Engineering) (Roger Skirrow and Ed Szmata, Alberta Transportation)			
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input checked="" type="checkbox"/> Maintenance Items			

Primary Site Issue:	The Bogey slide first occurred in 2004 – 2005. Site issue was slope movement affecting highway. The Double Bogey Slide occurred in 2012 – 2013 in the cutslope of a borrow pit pond, south of original Bogey slide.		
Dimensions:	See drawings		
Date of any remediation:	Highway paved in 1988/1989 which included grade widening and profile improvement. Overlaid in 2000 with 170 mm of Asphalt. The Bogey slide was repaired in 2011 and paved in 2012.		
Maintenance:		Worsened?	
Observations:	Description	Yes	No
<input checked="" type="checkbox"/> Pavement Distress	Bogey Slide Minor cracks observed on the asphalt. Double Bogey Slide No impact on pavement.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Bogey Slide Side slopes stable. No cracks. Double Bogey Slide 2 m back scarp in the cutslope of the borrow pit pond, has continued to retrogress and tension cracks are now 13.9 m from the edge of highway.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Erosion		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	No seepage observed at both locations.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Culvert Distress	Inlet of Centerline Culvert at Bogey Slide on west side of Hwy 743 is obstructed with rush overgrowth and should be properly cleaned to allow better water flow.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

	Golf course access road culvert located south of the Double Bogey Slide is obstructed. Culvert should be cleaned and outlet should be graded to reduce ponding.		
<input type="checkbox"/> Other		<input type="checkbox"/>	<input type="checkbox"/>
Instrumentation: None at this site.			
Assessment Bogey Slide The side slopes and the highway at the Bogey slide location were repaired in the fall of 2011, and no signs of movement were observed during the site visit of spring 2013 (Photos 5 to 7). Double Bogey Slide A landslide developed in the cutslope of the borrow pit pond. The back scarp was measured to be about 2 m deep. Tension cracks associated with the slide are now 13.9 m from the edge of the asphalt. The barb wire fence was observed leaning at the scarp location (Photos 1 to 2). The potential cause is cyclic filling and draining at the pond combined with a high groundwater table, and weathering and progressive loss of cohesion in the clay cut slopes. The cutslope angle of 2.2H:1V is steeper than usual for high plastic clay in this area.			
Recommendations: Bogey Slide The Bogey slide should be observed for stability and highway performance as part of the site visits for the Double Bogey Slide. Rushes and small shrubs are restricting the flow into the Hwy 743 centerline culvert inlet on the west side of the highway embankment, and should be periodically trimmed, (Photo 10). Double Bogey Slide Culvert should be cleaned and outlet should be graded to reduce ponding at the private entry culvert south of the slide area. In order to repair the back scarp of the borrow pit dugout one of the following recommendations may be considered: Option 1 <ul style="list-style-type: none"> ▪ Cut back the pond slope to about 6H: 1V. This involves further encroaching into the highway right of way. ▪ Install French drains at a spacing of 5 m centre to centre to drain the groundwater from the road into the pond. Option 2 <ul style="list-style-type: none"> ▪ Over-excavate the slump and reconstruct the cut slope with geogrid reinforced gravel, incorporating a gravel shear key at the base of the excavation. This would allow the repair to stay within the highway right of way. Either of the above remediation measures will need to be undertaken within the highway right of way. The ballpark cost for either option is \$175,000 to \$225,000.			



Photo 1 – Looking north at the backscarp of the pond slope failure of the Double Bogey Slide. Hwy 743 is on the left side of the photo.



Photo 2 - Looking south at the failed pond slope (Double Bogey Slide).



Photo 3 - Looking south at the highway and pond area.



Photo 4 - Looking north at the bench between the highway and failed pond slope (Double Bogey Slide).



Photo 5 - Looking north at the sideslope of the highway embankment at the former Bogey Slide



Photo 6 - Looking east at the culvert and subdrain outlets at the Bogey Slide Repair



Photo 7 - Looking south along the east side of the highway at the former Bogey Slide area.