

GEOHAZARD ASSESSMENT PROGRAM
NORTH CENTRAL REGION – ATHABASCA
2013 INSPECTION



Site Number	Location	Name	Hwy	km
NC 72	20 m east of south Mitsue access road	Graduation Rock Backslope Slump	2:46	42.5
Legal Description		UTM Co-ordinates (NAD 83)		
N.E.15-72-4-W5M		12 N 6124185	E 656972	

	Date	PF	CF	Total
Previous Inspection:	June 11, 2012	7	2	14
Current Inspection:	June 10, 2013	7	2	14
Road AADT:	2560	Year:	2012	
Inspected By:	Tarek Abdelaziz (Thurber) Gordon Wolters, Roger Skirrow, Arthur Kavulok, Brandon Sandford (TRANS)			
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items			

Primary Site Issue:	EBL backslope slump material pushing into highway ditch and impeding drainage.	
Dimensions:	5- 8 m wide (parallel to highway) x 16 m long (parallel to slope surface).	
Date of any remediation:	N/A	
Maintenance:	Issue was first noticed in 2009 and the ditch was maintained and cleared of the slump material in 2010 to enhance the drainage characteristics of the highway EBL ditch.	
Observations:	Description	Worse?
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Up to 1.5 m high multiple scarps within the slump mass. The slump materials consist of fissured low to medium plastic clay and silty fine sand; slight retrogression of headscarp cracks	<input type="checkbox"/>
<input checked="" type="checkbox"/> Erosion	Some erosion within the slump mass	<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	Flowing water in the catch water ditch in 2013; slight amount of water ponding in the ditch but unimpeded surface water flow in the highway ditch	<input type="checkbox"/>
<input type="checkbox"/> Bridge/Culvert Distress		<input type="checkbox"/>
<input checked="" type="checkbox"/> Other	Vegetation has grown within the slump mass	<input type="checkbox"/>
Instrumentation: None		
Assessment (Refer to attached Figure 1):		
<p>It appears that the slump mass has moved a bit, as manifested from the slight retrogression of the headscarp cracks, however the site conditions did not change significantly from last year.</p> <p>The vegetation growth continued to increase the overall stability of the slump mass. Erosion and transportation of sediments to the bottom of the slope may still occur, but at a slower rate than experienced in the past in the absence of vegetation cover.</p>		





Recommendations:

As discussed on site, the site conditions have not change significantly over the last couple of years and therefore this site will be removed from the future geo-hazard tours.

In the short term, the local MCI should continue to monitor the site and clean the ditch, as required, to maintain its drainage characteristics. If the slump materials start to accumulate in the ditch and block natural drainage, ground water levels may rise in the vicinity of the highway embankment and result in instability of the highway side slopes.

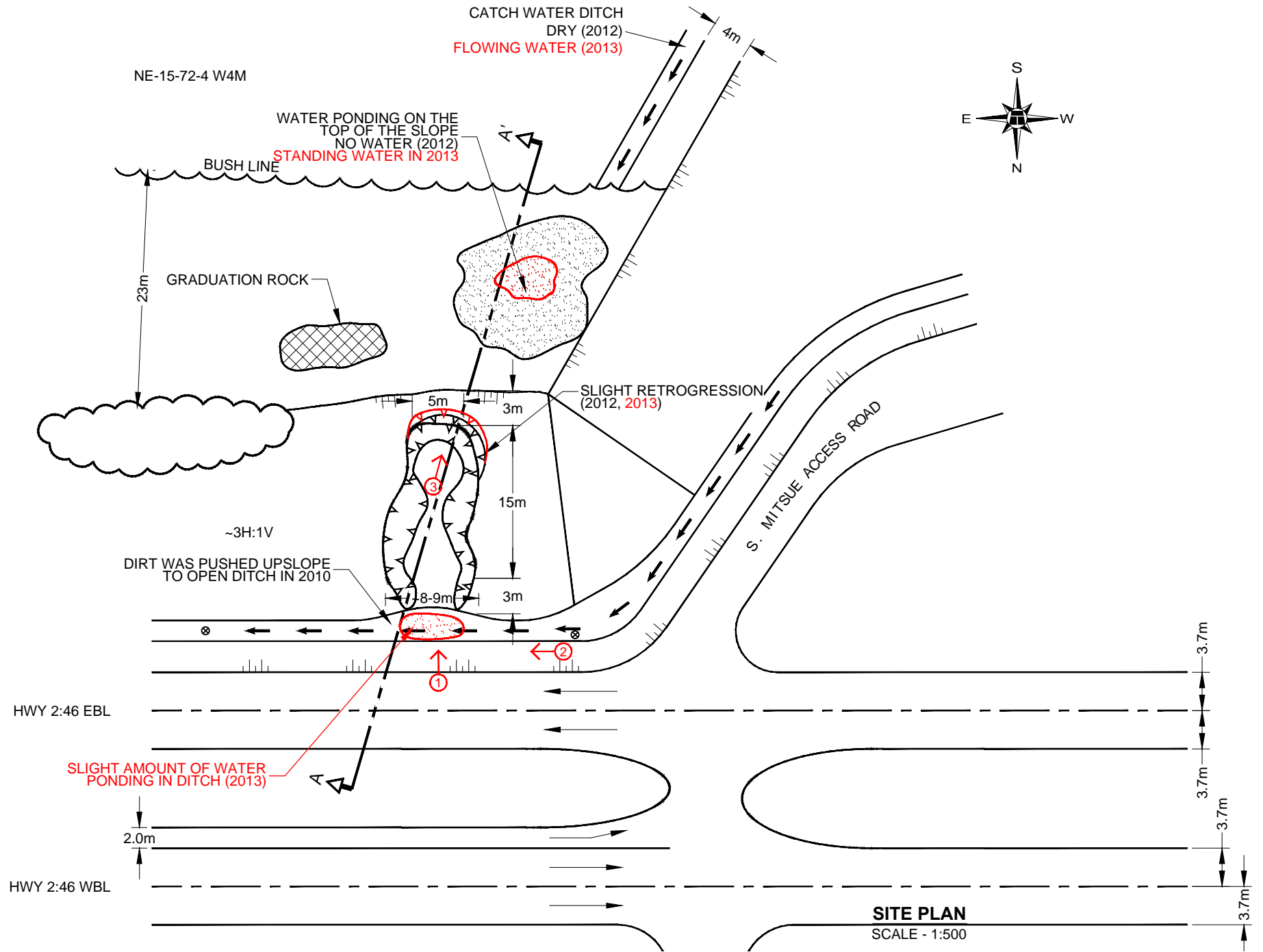
The recommended long-term remedial measure consists of excavating and replacing the slump mass with compacted granular fill. This option will also require constructing a longitudinal sub-drain along the base of the excavated mass and a riprap lined swale extending from the bush line to the bottom of the slope to drain the surface water from the catch water ditch in a controlled manner into the highway ditch. Ditch armouring using riprap along the bottom of the slope will also be required. The ballpark cost of this option would be in the range of \$80,000.

LEGEND

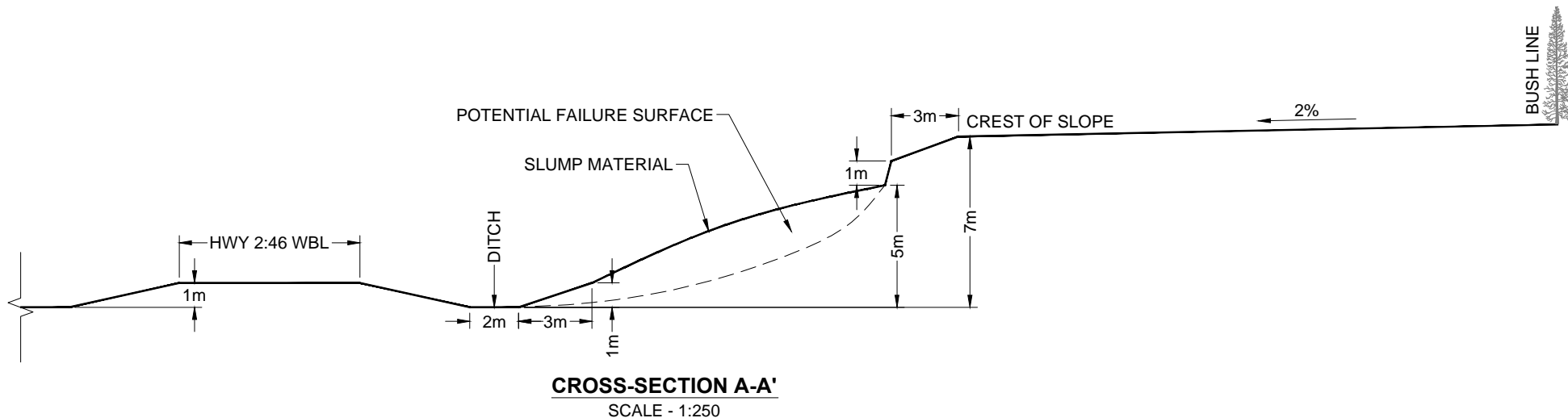
-  PHOTOGRAPH NUMBER, AND APPROXIMATE DIRECTION AND LOCATION (JUNE 10, 2013)
-  LIGHT POLE
-  SCARP
-  BUSH LINE

NOTES:


1. THE DIMENSIONS SHOWN ON THE SITE PLAN AND CROSS-SECTION ARE BASED ON SIMPLE FIELD MEASUREMENTS AND MAY DEVIATE FROM THE ACTUAL CONDITION.
2. JUNE 10, 2013 SITE OBSERVATIONS ARE SHOWN IN RED.



SITE PLAN
SCALE - 1:500



CROSS-SECTION A-A'
SCALE - 1:250




**NORTH CENTRAL REGION (ATHABASCA AREA)
- 2013 GEOHAZARD ASSESSMENT**

**NC72: HWY 2:46 GRADUATION ROCK
BACKSLOPE SLUMP (km 42.5)
SITE PLAN AND CROSS - SECTION A-A'**

FIGURE NC72-1

DRAWN BY	ML
DESIGNED BY	TSA
APPROVED BY	DWP
SCALE	AS SHOWN
DATE	DECEMBER 2013
FILE No.	15-16-285



THURBER ENGINEERING LTD.



Photo# 1 General view of highway backslope slump; note that vegetation has grown within the slump mass (looking south)



Photo# 2 Highway surface and side slope at the slump location, looking east; slight amount of water ponding in the ditch



Photo# 3 Looking south at the north facing crack; note fresh scarp and slight retrogression of the slump