GEOHAZARD ASSESSMENT PROGRAM

NORTH CENTRAL REGION – ATHABASCA

2012 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:	May 4, 2011	7	2	14
Current Inspection:	June 11, 2012	7	2	14
Road AADT:	2560		**Year:**	2011
Inspected By:	Tarek Abdelaziz, Don Proudfoot (Thurber) Gordon Wolters, Roger Skirrow, Arthur Kavulok (TRANS)			
Report Attachments:	☑ Photographs ☑ Plans ☐ 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 has been maintained and cleared of the slump material in 2010 to enhance the drainage characteristics of the highway EBL ditch	
Observations:	**Description**	**Worse?**
☐ Pavement Distress		☐
☑ 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	☐
☑ Erosion	Some erosion within the slump mass	☐
☑ Seepage	Dry catch water ditch in 2012; unimpeded surface water flow in the highway ditch	☐
☐ Bridge/Culvert Distress		☐
☑ Other	Vegetation has grown within the slump mass	☐

Instrumentation: None

Assessment (Refer to attached Figure 1)**:**

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.

The vegetation growth should help increasing 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.

Recommendations:

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 pall bark cost of this option would be in the range of $75,000.

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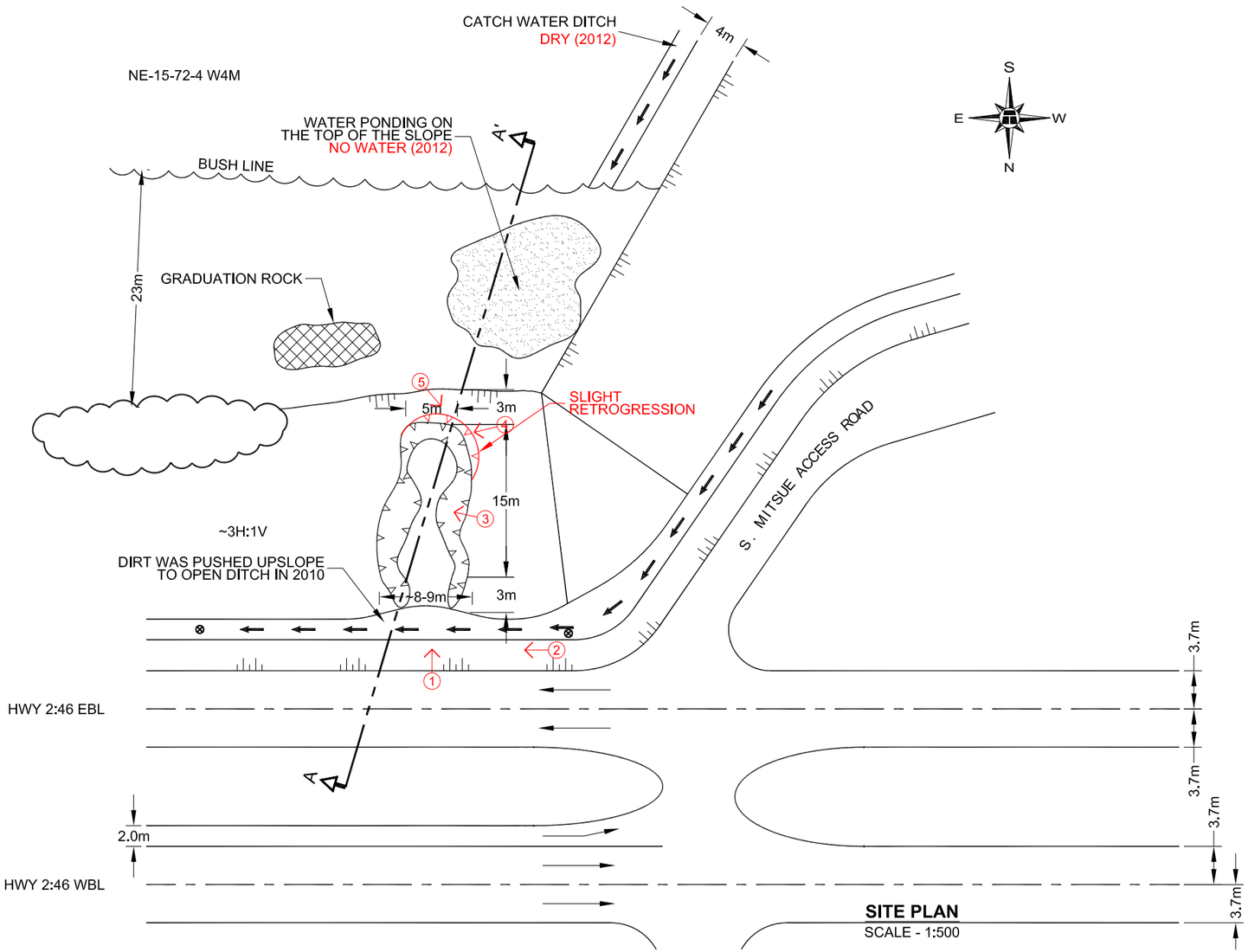
LEGEND

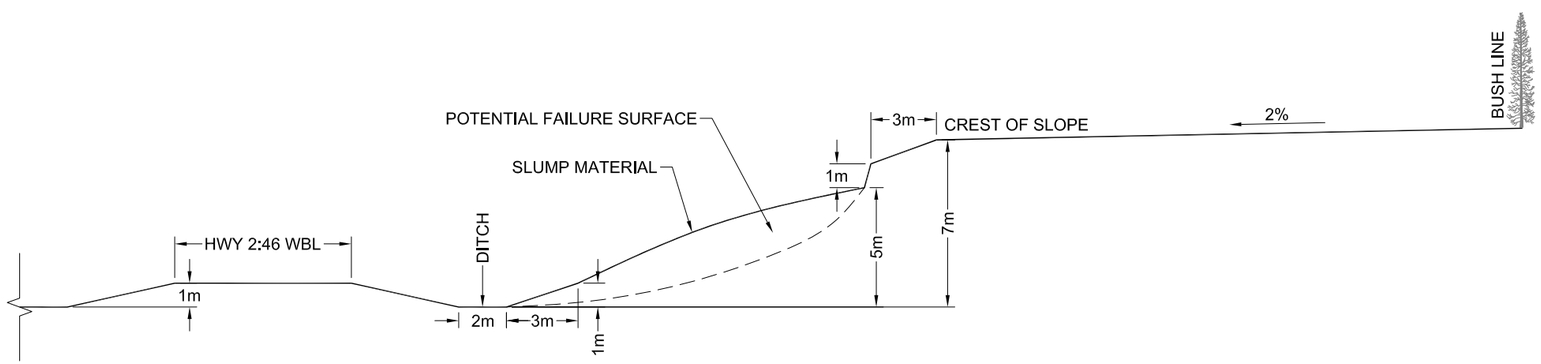
- ① PHOTOGRAPH NUMBER, AND APPROXIMATE DIRECTION AND LOCATION (JUNE 11, 2012)
- ⊗ LIGHT POLE
- SCARP
- BUSH LINE

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 11, 2012 SITE OBSERVATIONS ARE SHOWN IN RED.



SITE PLAN
SCALE - 1:500



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

Alberta Transportation

NORTH CENTRAL REGION (ATHABASCA AREA) - 2012 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	NOVEMBER 2012
FILE No.	15-16-275

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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

Photo# 3 Looking east at the west facing crack; the exposed face of the crack consists of fine silty sand

Photo# 4 Looking east at the slump cracks near the crest of the slope; note further movement of headscarp cracks

Photo# 5 Looking northwest at the slump cracks near the crest of the slope; note the retrogression of the scarp cracks