GEOHAZARD ASSESSMENT PROGRAM

PEACE RIVER / HIGH LEVEL AREA

2011 INSPECTION

Government of Alberta ■ Transportation

THURBER ENGINEERING LTD.

Site Number	Location	Name	Hwy	km
PH63	About 70 km north of Red Earth, AB	Slug Creek	88:12	Approx. 5
Legal Description		**UTM Co-ordinates**		
LSD13-17-93-07-W5M		11V N 6327155 E 615361		

	Date	PF	CF	Total
Previous Inspection:	June 4, 2010	12	2	24
Current Inspection:	June 7, 2011	10	2	20
Road AADT:	180		**Year:**	2010
Inspected By:	(Don Proudfoot and Harjeet Panesar, Thurber Engineering) (Neil Kjelland and Ed Szmata, Alberta Transportation)			
Report Attachments:	☑ Photographs ☑ Plans ☐ Maintenance Items			

Primary Site Issue:	Surficial backslope failures caused by seepage		
Dimensions:	See drawing		
Date of any remediation:	None in the last year		
Maintenance:	None in the last year	**Worsened?**	
Observations	**Description**	**Yes**	**No**
☐ Pavement Distress		☐	☐
☑ Slope Movement	Shallow slumps, on both backslopes didn't look much worse than last year Grass cover was significantly better than before	☐	☑
☐ Erosion		☐	☐
☑ Seepage	Several wet areas located on both backslopes	☐	☑
☐ Bridge/Culvert Distress		☐	☐
☐ Other		☐	☐

Instrumentation:

None

Assessment (Refer to Figure PH63-1)**:**

The slope failures appear to be the result of clay softening plus seepage forces flowing from the shallow ground water table on the valley top towards the backslopes. The wet areas noted on the backscarps may be zones where the material is more permeable and groundwater seeps in greater quantity through them. The excavation required for the cut and the presence of groundwater may have led to softening and swelling of the clay.

Generally the slope conditions appear to be similar to last year.

Recommendations:

Subdrainage measures aiming to increase the stability of the backslopes are recommended. These may consist of gravel drains installed in the east and west backslopes to conduct the water downslope. For this purpose, ditches 1 m wide and 1.5 m deep could be excavated and backfilled with washed gravel enveloped in non-woven geotextile. The surficial 0.3 m of the excavated ditches should be backfilled with clay and topsoil and seeded. The gravel drains should be spaced about 10 m center-to-center across the affected backslope locations. The upslope end of the gravel drain should extend 1.5 m vertically along the affected 4H:1V inclination above the highest level of observed seepage. The water from the gravel drains could be discharged into perforated subdrain pipes installed at least 1.5 m below the ditches at the toes of the backslopes. The subdrain pipes should also be surrounded by washed gravel enveloped in non-woven geotextile with a compacted clay cap of 0.5 m thickness constructed at the ditch bottom level.

After the slope drains have been installed and the slide area has dried, the slide material should be removed (taking care not to disturb the drains) and the lower slope benched and rebuilt to its original line with salvaged, moisture conditioned clay fill. It should then be promptly top soiled and seeded.

Additional measures would include seeding of the backslopes and removal of the loose material dumped on the crest of the west backslope, which should be disposed away from the site.

The ballpark cost of the above measures could be in the order of $400,000 including engineering if the entire length of the east and west backslopes are treated and drained into a subdrain system installed below the ditches. The cost would be considerably reduced if only the worst sections are addressed and the ground drains are drained into the ditches instead of a subdrain system, however with the possible inconvenience of having to return for additional repairs at a later date.

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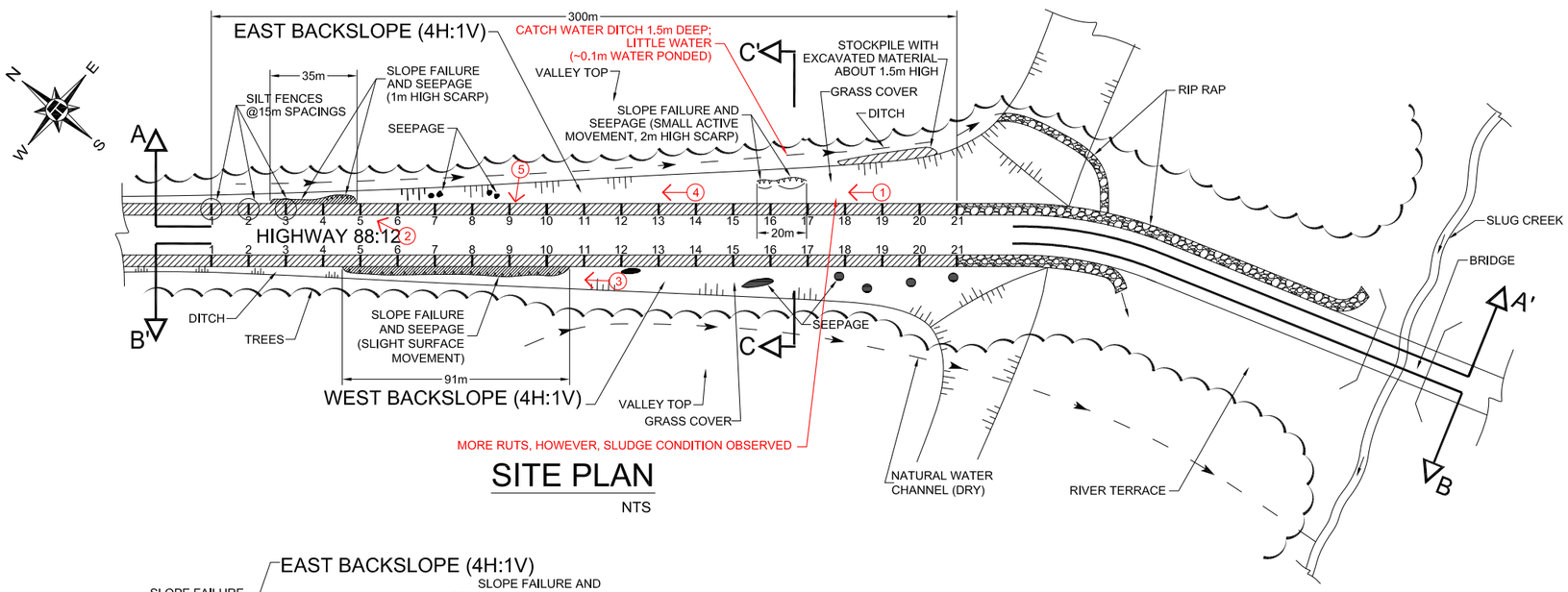
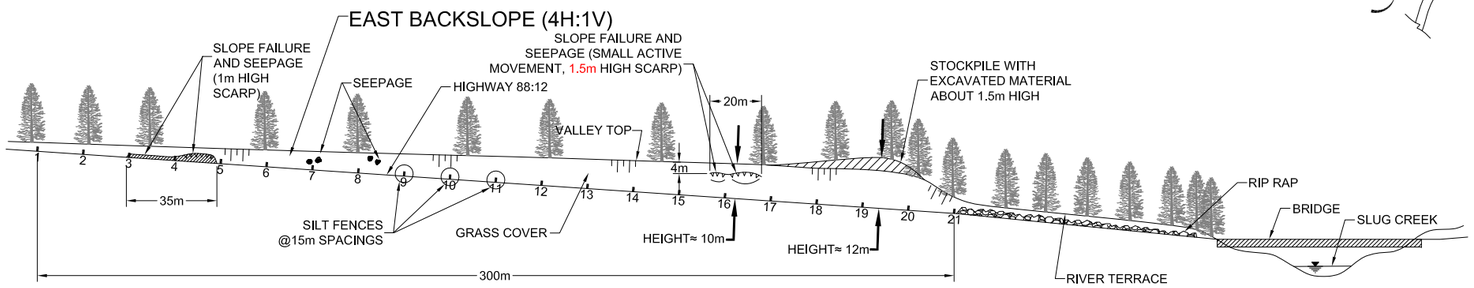


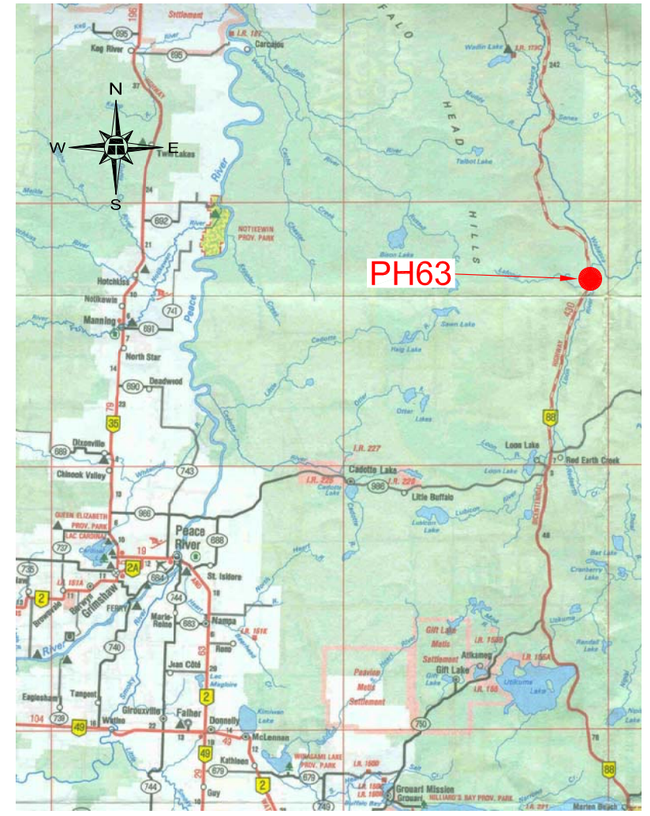
SITE PLAN

NTS



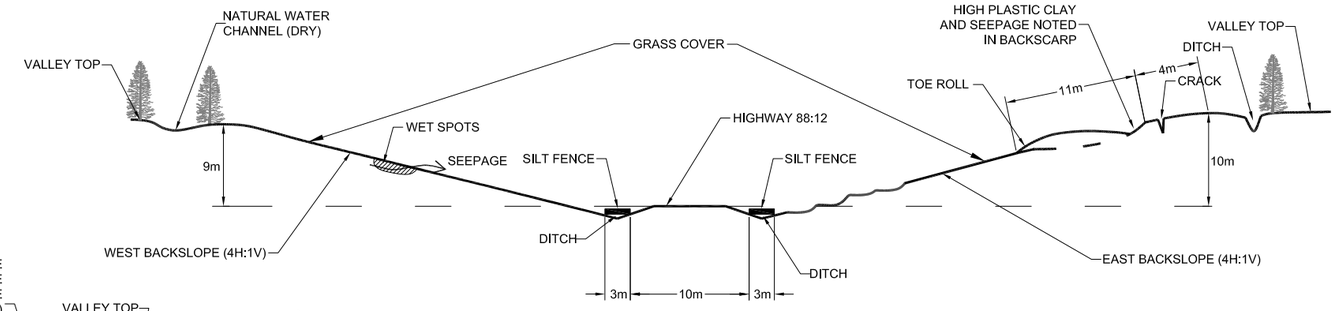
EAST BACKSLOPE

CROSS SECTION A-A' NTS



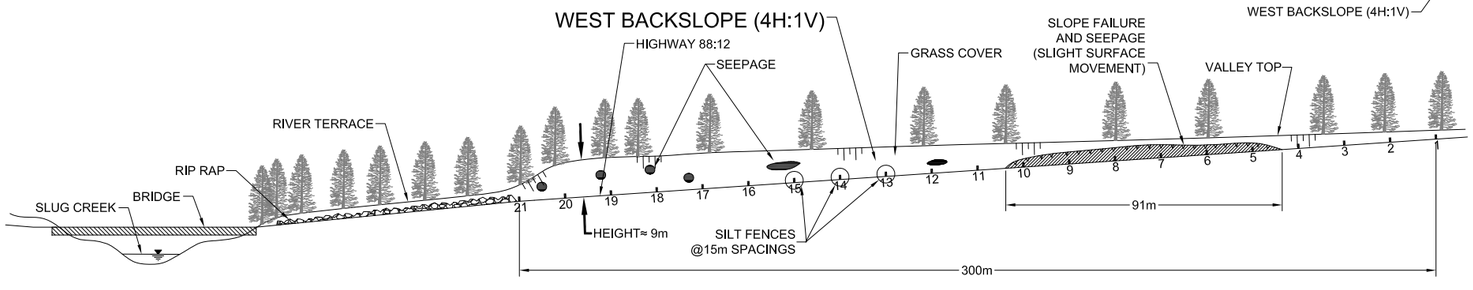
SITE MAP

NOT TO SCALE



CROSS SECTION C-C'

(FACING NORTH) NTS



WEST BACKSLOPE

CROSS SECTION B-B' NTS

NOTES :

1. FEATURE LOCATIONS ARE APPROXIMATE
2. JUNE 2010 OBSERVATIONS SHOWN IN RED

LEGEND :

SLIDE BACKSCARP

① PHOTO AND DIRECTION

FIGURE PH63-1

PH63: HWY 88:12 - NORTH OF SLUG CREEK BRIDGE PEACE REGION (PEACE RIVER/HIGH LEVEL) GEOHAZARD ASSESSMENT

DATE : JUNE 2011

THURBER PROJECT # 15-16-264

THURBER ENGINEERING LTD.

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