

GEOHAZARD ASSESSMENT PROGRAM

PEACE RIVER / HIGH LEVEL AREA

2010 INSPECTION



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:	May 20, 2009	12	2	24
Current Inspection:	June 4, 2010	12	2	24
Road AADT:	180	Year:		2009
Inspected By:	(Don Proudfoot and Gustavo Padros, Thurber Engineering) (Roger Skirrow, Neil Kjelland, Ted Prue and Ed Szmata, Alberta Transportation)			
Report Attachments:	<input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> 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
<input type="checkbox"/> Pavement Distress		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Slope Movement	Shallow slumps, on both backslopes didn't look much worse than last year Grass cover was significantly better than before	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Erosion		<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Seepage	Several wet areas located on both backslopes, however due to rain they could not be delineated during my 2009 visit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Bridge/Culvert Distress		<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Other		<input type="checkbox"/>	<input type="checkbox"/>

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.

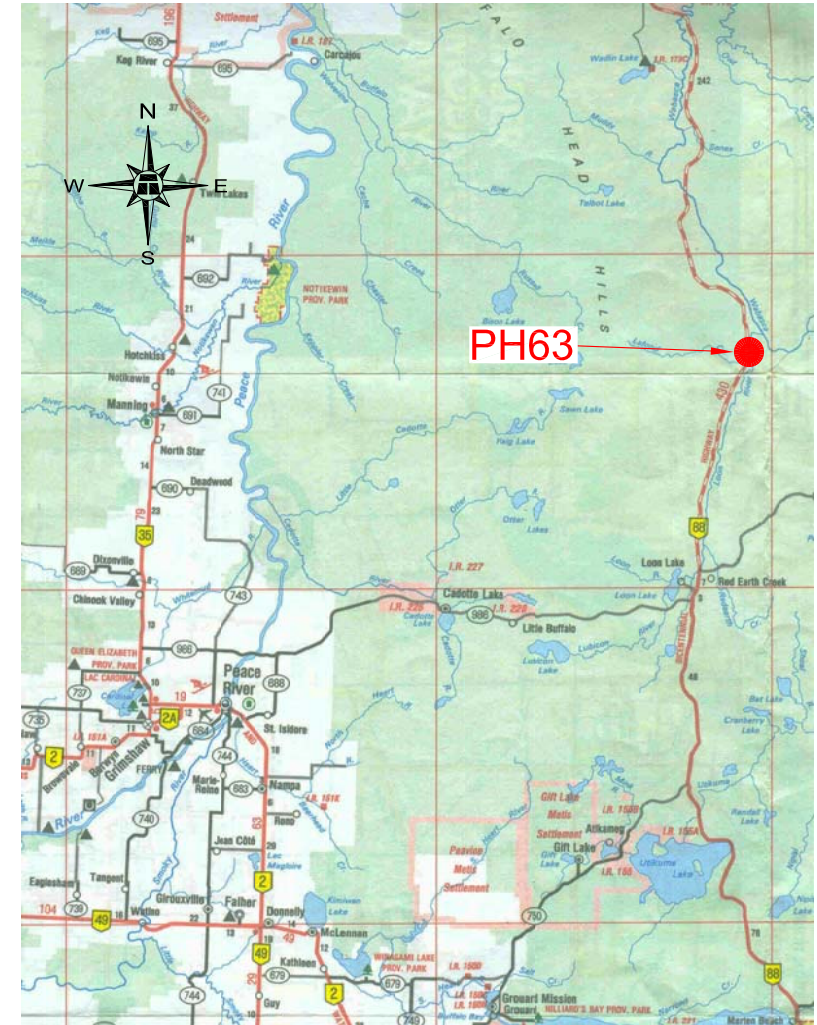
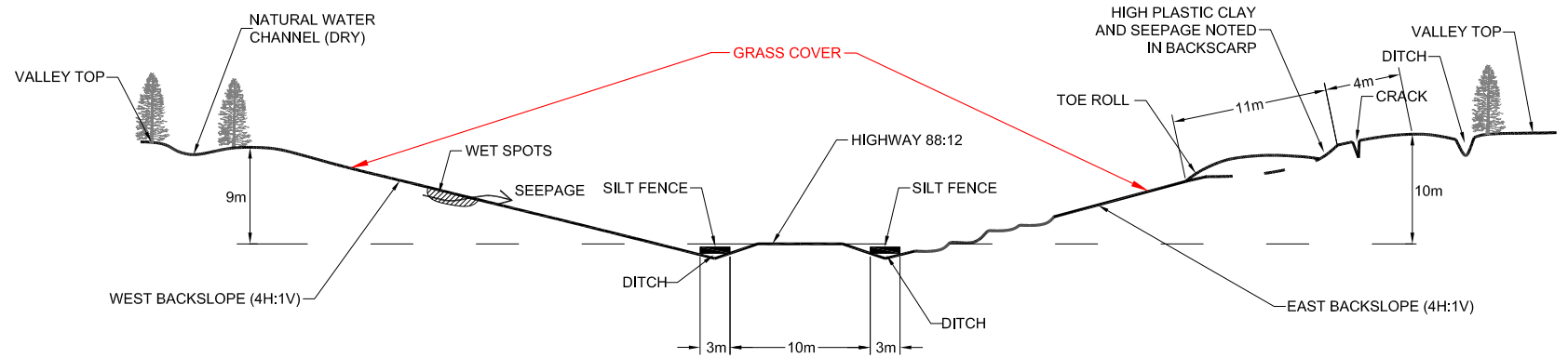
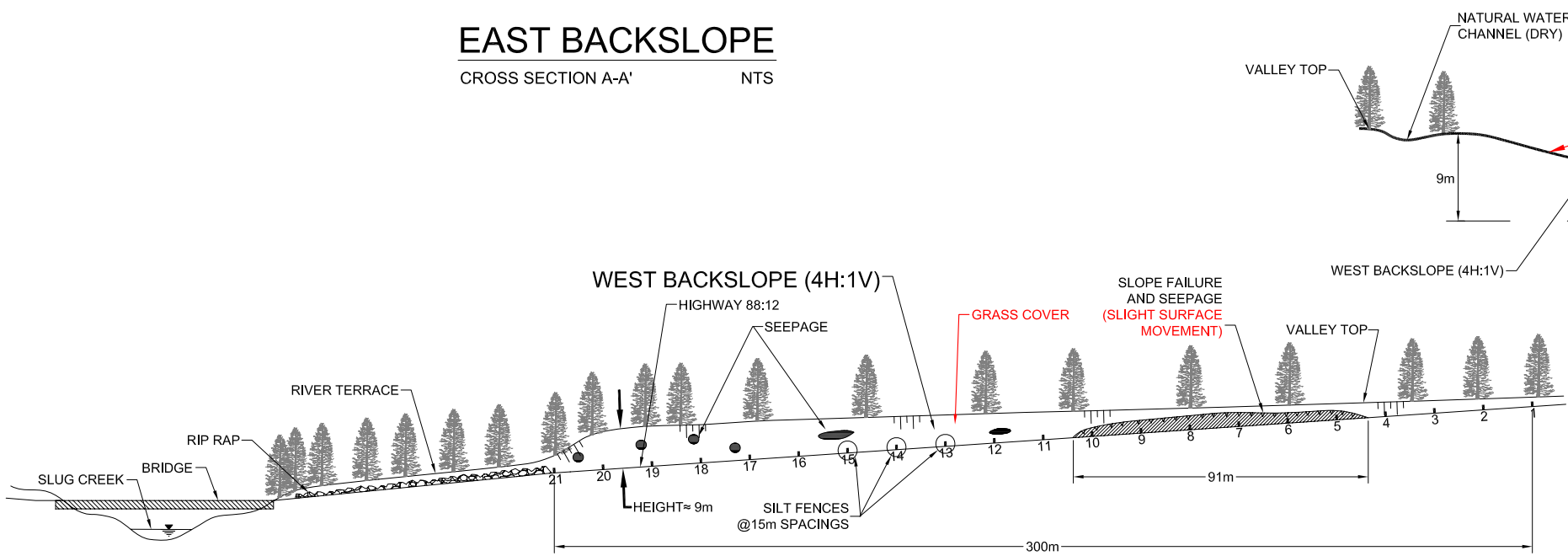
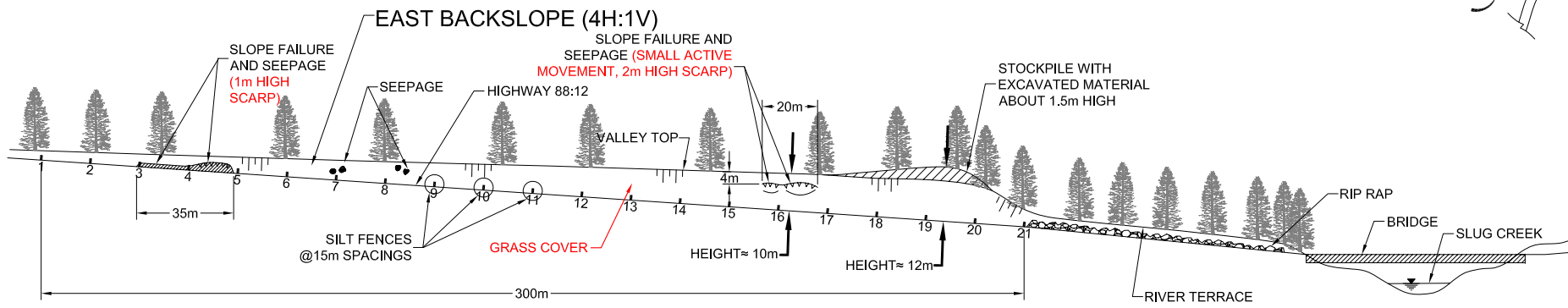
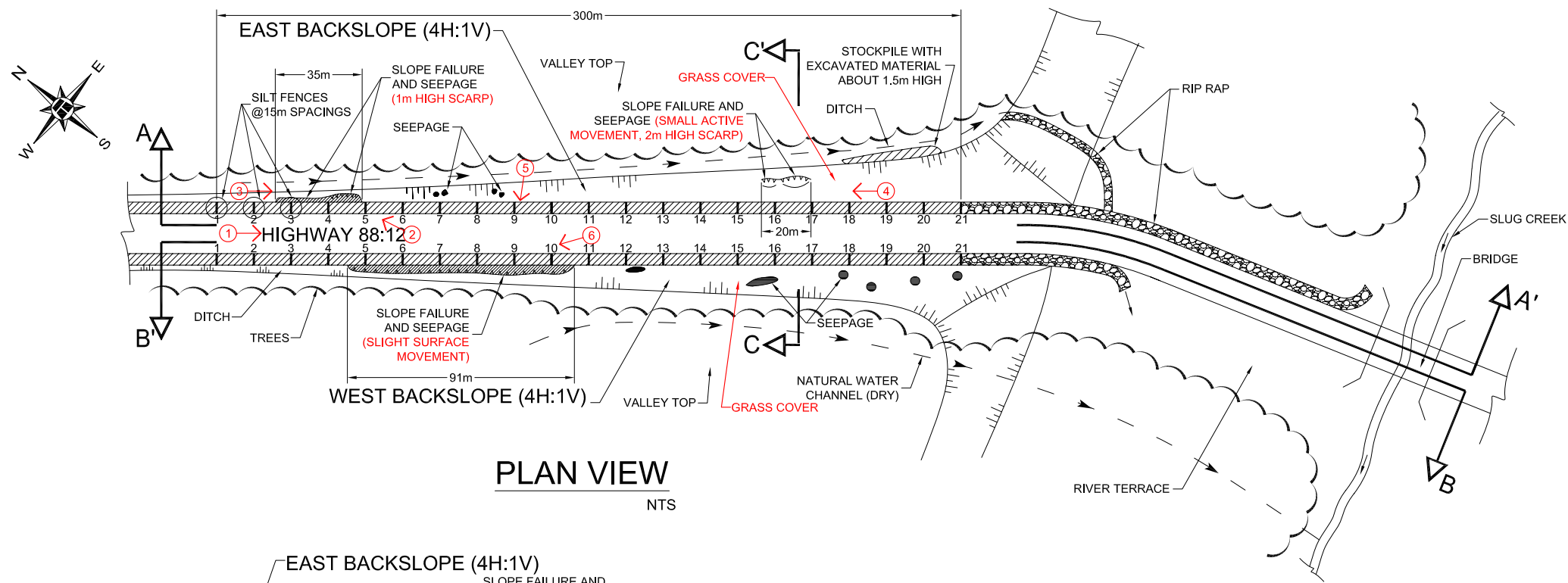
Recommendations:

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 should discharge 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. The cost would be reduced if only the worst sections are addressed, however with the possible inconvenience of having to return for additional repairs at a later date.



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 2010
THURBER PROJECT # 15-16-250



Photo 1 – View of the site showing east and west backslopes, looking southeast.



Photo 2 – Slope failure on east backslope, looking east.



Photo 3 – Clay material along backscarp on east sideslope, looking south.



Photo 4 – Slump on east backscarp, looking north.



Photo 5 – Wet areas and surficial slope failures on west backslope, looking southwest.



Photo 6 – Wet area and surficial slope failure on west backslope, looking west.