



November 30, 2005

File: 15-85-11

Alberta Infrastructure and Transportation
Room 223, Provincial Building
4709-44 Avenue
Stony Plain, Alberta
T7Z 1N4

Attention: Mr. Michael Baik

**NORTH CENTRAL REGION GEOHAZARD ASSESSMENT
HWY 40:28 GREGG RIVER BRIDGE (NC34)
2005 ANNUAL INSPECTION REPORT**

Dear Sir;

This letter documents the 2005 annual site inspection of a portion of Highway 40:28 (approximate km 9) located about 13 km north of the Hamlet of Cadomin, Alberta. The legal location of the site is SE5-48-24-W5M. The work was undertaken by Thurber Engineering Ltd. (Thurber) in partial fulfillment of our Geotechnical Services for Geohazard Assessment, Instrumentation Monitoring and Related Work contract (CE046/2004, Section B) with Alberta Transportation (AIT).

The inspection was undertaken on June 1, 2005 by Mr. Don Law, P.Eng. of Thurber. The reconnaissance was carried out in the presence of Mr. Roger Skirrow, P.Eng., and Mr. Fred Cheng, P.Eng. of AIT.

1. BACKGROUND

Thurber last visited the site in June of 2004, and the site conditions observed at that time are described in our Part B assessment letter provided in the site binder. Additional background information for the site is provided in the geotechnical File Review in Section A of the binder.

2. SITE OBSERVATIONS

The highway roadway surface, side slope and toe area were inspected in the vicinity of the previous slide repair. In addition, the east ditch and back slopes were inspected. The following points summarize the observations made during the reconnaissance. Site features are shown on the site plan (Figure NC34-1) in Section F. Cross-Section A-A' through the roadway and side slope is provided

on Figure NC34-2 as provided previously in Section F, and is still considered accurate. Selected photographs taken during the site reconnaissance are attached.

Slide Repair Area

The roadway surface had been overlaid with asphalt through this area in the fall of 2004. No signs of cracking were noted in the pavement surface at the previous slide area. In addition, there was no indication of slope failure in the side slope or toe berm areas.

A new guardrail adjacent to the side slope in the area of previous distress was added as part of the overlay project.

East Ditch and Back Slopes

The east ditch had been regraded as part of the overlay program through the area, and included a clay cap and erosion control soil covering on the ditch bottom. The existing grade in the ditch is relatively flat and drains north by the slide area to a centerline culvert with a 1 m diameter located north of the slide area as shown on the site plan. The flow in the ditch is relatively steady, with areas of ponded water observed within the ditch due to its relatively small gradient.

Flow through the culvert located north of the slide area spills into an open half round culvert to a point partway down the side slope, and travels overland from there. The flow rate at the end of the half round down pipe was estimated to be about 20 litres per minute.

No seepage was noted in the back slope adjacent to the previous slide area, which is a change from the observations last year when seepage was noted in the back slope at this location. Significant back slope seepage was still evident at a location further south of the former slide area.

One slope inclinometer and one pneumatic piezometer (SI04-2, PN04-2) were read in the Spring of 2005 at the mid slope area located as shown on the site plan. All other instruments at this site were covered by the asphalt overlay. The results of the instrument readings are presented in Appendix C and indicate small movements and a slight rise in the pore pressure at this location since the previous reading in the fall of 2004.

3. ASSESSMENT

The cracking previously noted in this area has not reflected through the pavement surface, and no other signs of slope instability were noted at the site. In addition,

the drainage systems previously installed at the site appear to be functioning in a satisfactory manner, and outflow from these systems is not causing erosion.

Based on the above noted observations and the results of recent instrumentation monitoring, the cracks in the roadway surface are expected to be a result of a minor reactivation of the old slide, likely due to high water levels within the slope.

4. RISK LEVEL

A risk level of 15 is considered applicable to this site, based on a Probability Factor of 5 (inactive, or active but very slow rate of movement) and a Consequence Factor of 3. This is the same risk level as was recommended for the 2004 site reconnaissance.

5. RECOMMENDATIONS

Continued monitoring of the instrumentation on a semi-annual basis and visual yearly inspection of the site as currently programmed is recommended. Additional instrumentation is not recommended at this time. No maintenance is required at this site.

6. CLOSURE

We trust this assessment meets your needs at this time. Please contact the undersigned should questions or concerns arise.

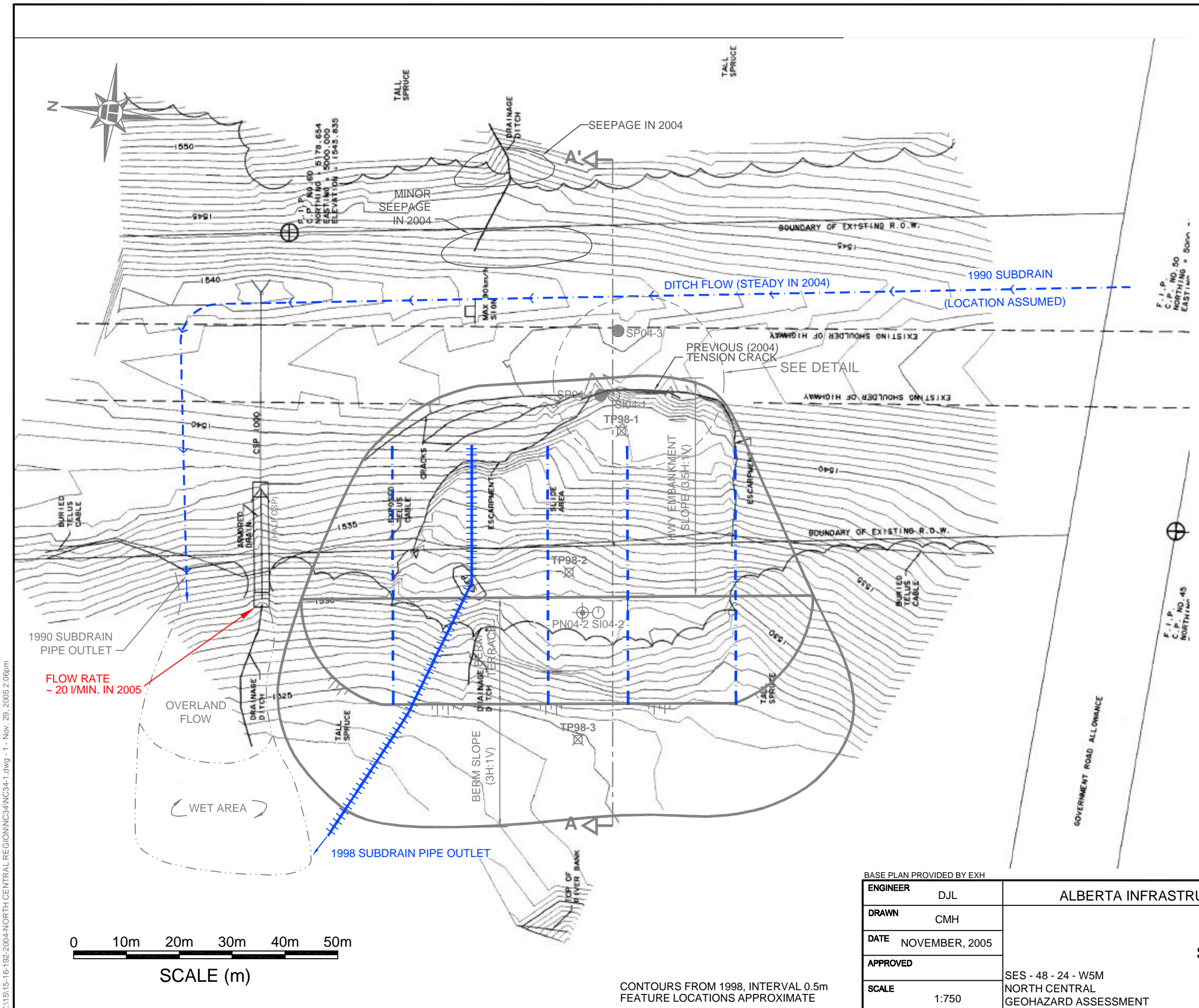
Yours very truly,
Thurber Engineering Ltd.
D. Papanicolas, P.Eng.
Review Principal



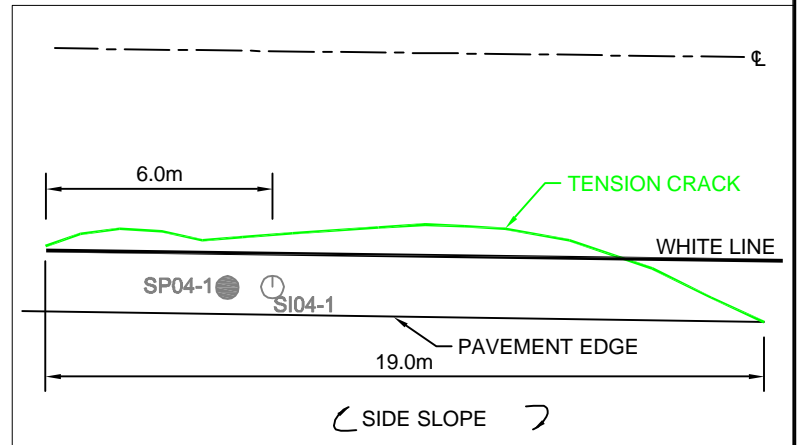
D.J. Law, P.Eng.
Principal, Project Engineer
/slp

Attachments

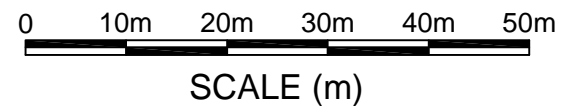
cc: Mr. Roger Skirrow, P.Eng., Director of Geotechnical Services, AT



- LEGEND**
- SLOPE INCLINOMETER
 - STANDPIPE PIEZOMETER
 - PNEUMATIC PIEZOMETER
 - PREVIOUS TEST PIT COMPLETED IN 1998
 - PERFORATED SUBDRAIN PIPE (1998)
 - FRENCH DRAIN (1998)
 - 1990 SUBDRAIN
 - 2005 FEATURES SHOWN IN RED



DETAIL OF SCARP AREA (PLAN)
SCALE 1:200 (APPROX.)



CONTOURS FROM 1998, INTERVAL 0.5m
FEATURE LOCATIONS APPROXIMATE

BASE PLAN PROVIDED BY EXH		THURBER PROJECT #15-16-192	
ENGINEER	DJL	ALBERTA INFRASTRUCTURE AND TRANSPORTATION	
DRAWN	CMH	SITE PLAN	
DATE	NOVEMBER, 2005		
APPROVED			
SCALE	1:750		
SES - 48 - 24 - W5M NORTH CENTRAL GEOHAZARD ASSESSMENT		Km 9 HWY 40:28 (NC34) GREGG RIVER	
		DRAWING No. FIGURE NC34-1	

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Photo 1 – Previous slide area looking south.

June 1, 2005



Photo 2 – Looking south at repaired side slope.

June 1, 2005



Photo 3 – East ditch (looking south, culvert inlet in foreground) June 1, 2005



Photo 4 – Ponded water in east ditch (looking north). June 1, 2005



Photo 5 – East ditch and pavement surface (looking north). June 1, 2005



Photo 6 – Half round culvert flow from east ditch (looking east) June 1, 2005