



September 29, 2008

CG25277.B

Alberta Transportation  
2<sup>nd</sup> Floor, 803 Manning Road NE  
Calgary, AB T2E 7M8

Attn: Mr. Ross Dickson

**Re: Southern Region Geohazard Assessment Program  
Site S7 – Millarville, Highway 549:02  
2008 Annual Inspection Report**

This letter documents the 2008 annual site inspection of Site S7 – Millarville on Highway 549:02, approximately 12 km west of Millarville, AB and approximately 1.5 km west of the junction with Secondary Highway 762. This segment of the highway consists of a fill embankment constructed on a natural, gentle slope down to the north above an unnamed tributary to Fisher Creek.

AMEC Earth & Environmental (AMEC), a division of AMEC Americas Limited, performed this inspection in partial fulfillment of the scope of work for the supply of geotechnical services for Alberta Transportation's (AT's) Southern Region (AT contract CE061/08).

The site inspection was performed on June 19, 2008 by Mr. Andrew Bidwell, P.Eng. and Mr. Bryan Bale of AMEC in the company of Mr. Roger Skirrow of AT.

## **BACKGROUND**

A general description of the geohazard conditions at this site along with the site geological setting and chronology of previous events, investigations, monitoring and repair work were provided in the Geotechnical File Review (Section A of binder) and summarized in previous annual inspection reports<sup>1</sup>.

It is understood that this site has been monitored by AT and consultant personnel since the late 1980's, however limited information is available on the geotechnical issues and work done prior to 2000. Annual inspections from 2000 to 2004 noted that the road surface at this site was affected by ongoing landslide movement with a large, significant cracking and settlement area repeatedly forming across both lanes despite numerous patches and overlays. A reduced

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<sup>1</sup> AMEC report "Southern Region Geohazard Assessment, Annual Assessment Report, 2007", project number CG25263, submitted to AT on November 6, 2007.

speed limit was often necessary in addition to the temporary repairs. AMEC performed a geotechnical site investigation in 2001 followed by the design of a shear key repair that was implemented in the fall of 2004. The site has been inspected annually by AT and AMEC personnel since the repairs.

## **SITE OBSERVATIONS**

Key observations regarding changes in the site conditions since the 2007 inspection are summarized as follows:

- The cracking areas around Sta. 5+280/5+290 and 5+440 (see attached site plan) that were noted west of the 2004 shear key construction area in the 2005 to 2007 annual inspections were still visible through minor patches and overlays since the 2007 inspection. However, the magnitude of the cracking and adjacent settlement was significantly less than noted during the 2007 inspection. Photos S7-1 to S7-3 show views of the cracking area as seen during the June 2008 inspection.
- Otherwise, no significant changes in the site appearance since the 2007 inspection.

## **ASSESSMENT**

The 2004 shear key construction appears to have mitigated the significant and ongoing landslide damage to the highway that was occurring at this site between 2000 and 2004.

The post-2004 cracking areas that have been noted west of the shear key repairs from 2005 onwards continue to be visible, but with less significant damage to the road surface in the most recent inspections. It appears that this cracking can continue to be treated as a maintenance issue.

## **RISK LEVEL**

The current recommended Risk Level for this site, based on AT's general geohazard risk matrix, is as follows:

- Probability Factor of 6 based on the apparent active but very slow rate of movement in the cracking areas since the 2007 inspection. This is a reduction from the value of 10 recommended after the 2007 inspection, based on the lesser amount of damage to the road surface over the past year.
- Consequence Factor of 1 based on the degree of damage to the road surface over the past year that is manageable as a maintenance issue.

Therefore, the current recommended Risk Level for this site is 6, which is a reduction from the value of 30 after the 2007 inspection. This is a significant reduction in one year, but is considered warranted based on the observations from the 2008 inspection.

## **RECOMMENDATIONS**

### **Maintenance and Short Term Measures**

- AT's maintenance contractor personnel should continue to patch or crack-seal the cracking areas as required in the future, as part of the normal maintenance for the highway.

### **Long Term Measures**

- The annual site inspections by AT and AMEC personnel should be discontinued.

### **Investigation**

No further investigation work for this site is recommended at this time.



## **CLOSURE**

This report has been prepared for the exclusive use of Alberta Transportation for the specific project described herein. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it are the responsibility of such third parties. AMEC Earth & Environmental, a division of AMEC Americas Limited, cannot accept responsibility for such damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This report has been prepared in accordance with accepted geotechnical engineering practices. No other warranty, expressed or implied, is made.

We trust that this meets your needs at this time. Please contact the undersigned if you have any questions or require any further information.

Respectfully Submitted,

**AMEC Earth & Environmental,  
a division of AMEC Americas Limited**

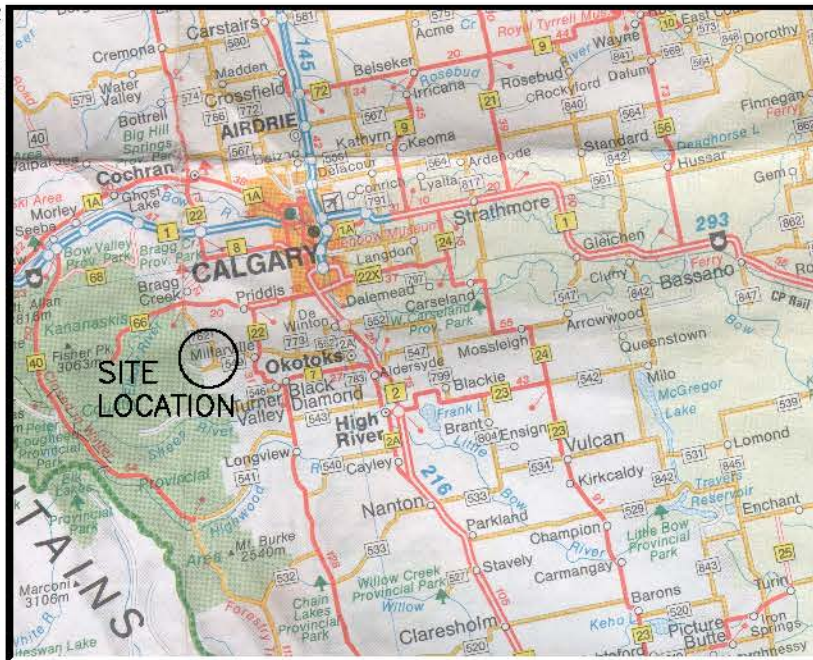
Andrew Bidwell, M.Eng., P.Eng.  
Associate Geological Engineer

APEGGA Permit to Practice No. P-04546

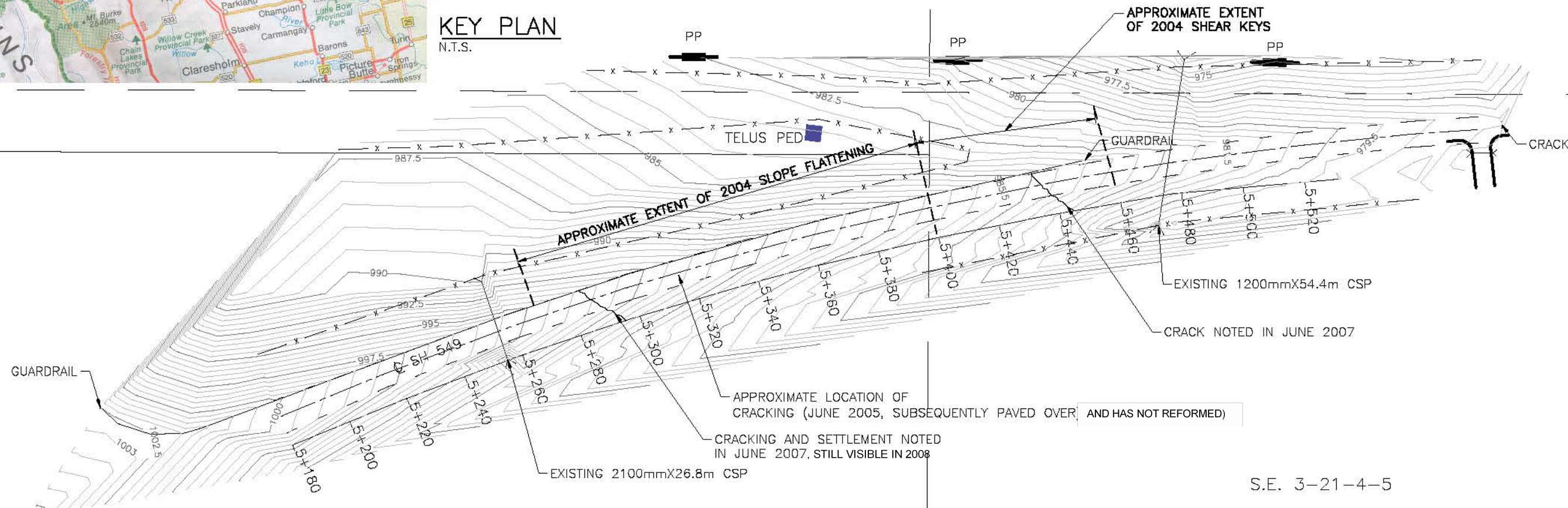
Reviewed by:

Pete Barlow, M.Sc., P.Eng.  
Principal Geotechnical Engineer

Attachments: Site Plan  
Photos



N.E. 3-21-4-5

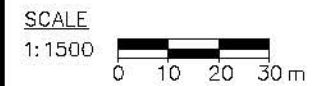


S.E. 3-21-4-5

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NOTES:

1. TOPOGRAPHY AND SITE FEATURES SHOWN ARE FROM 2001 AND DO NOT REFLECT THE EARTHWORKS PERFORMED AT THIS SITE IN LATE 2004.
2. ALL INSTRUMENTATION BOREHOLES FROM 2001 HAVE BEEN PAVED OVER OR REMOVED DURING 2004 EARTHWORKS.



		PROJECT: SOUTHERN REGION GEOHAZARD ASSESSMENT			
		TITLE: SITE PLAN S7-SH 549 - WEST OF MILLARVILLE			
CLIENT:			DATE: AUGUST 2008	JOB No.: CG25277.B	CAD FILE:
			FIGURE No.:	REV.	
			FIGURE S7-1	A	



**Photo S7-1 – June 2008 (top)**

Facing eastbound across the cracking area around Sta. 5+280/5+290. The previous cracks are still visible, but appear to have remained sealed since 2005/2006.



**Photo S7-2 – June 2008 (bottom)**

Another view facing eastbound, closer to the cracking area around Sta. 5+280/5+290. Minor additional cracking has occurred since the 2007 inspection, but previously-sealed cracks have not re-opened.



**Photo S7-3 – June 2008 (top)**

Facing westbound across the cracking area around Sta. 5+280/5+290. No significant additional cracking since the 2007 inspection.