**Government of Alberta** ■
Transportation

# STONY PLAIN REGION
# GEOHAZARD RISK ASSESSMENT
# SITE INSPECTION FORM

| SITE NUMBER AND NAME: | HIGHWAY AND KM: | PREVIOUS INSPECTION DATE: | INSPECTION DATE: |
|---|---|---|---|
| NC 19 – Pavement Cracking (Site B) | Hwy 39:06, km 5.6 | June 2, 2009 | May 20, 2010 |
| **LEGAL DESCRIPTION:** | **NAD 83 COORDINATES:** | **RISK ASSESSMENT:** | |
| SE 11-49-6-W5M | -50736 E, 5897872 N | PF: 3 CF: 2 **TOTAL: 6** | |

| SUMMARY OF SITE INSTRUMENTATION: | INSPECTED BY: |
|---|---|
| Instrumentation present at this site was monitored to assess performance of Site A pile wall repair. Instrument readings were discontinued in 2010 due to good performance of Site A pile wall repair. Inspection of Site B toe berm continued for at least one more year. | Adam Gmeinweser, P. Eng. (EBA)<br>Chris Gräpel, P. Eng. (EBA)<br>Sabhago Oad, P. Eng. (TRANS)<br>Wilf Cousineau (TRANS)<br>Fred Cheng, P. Eng. (TRANS) |

LAST READING DATE: Fall 2009

PRIMARY SITE ISSUE: Deformation of asphalt at Site B

APPROXIMATE DIMENSIONS: 0.3 m wide by 10 m long (Site B)

DATE OF REMEDIAL ACTION: Pile wall constructed in 2003 at Site A. Toe berm constructed in 2007 at Site B.

| ITEM | CONDITION EXISTS | | DESCRIPTION AND LOCATION | NOTICABLE CHANGE FROM LAST INSPECTION | |
|---|---|---|---|---|---|
| | YES | NO | | YES | NO |
| Pavement Distress | X | | Settlement and cracking present at pavement edge of eastbound lane at km 5.6 | X | |
| Slope Movement | | X | | | |
| Erosion | | X | | | |
| Seepage | | X | | | |
| Culvert Distress | | X | | | |

**COMMENTS:**
Location and site plan shown on Figure NC-19.
Site conditions shown in Photos 1 to 2.
Risk level unchanged from 2009.

eba

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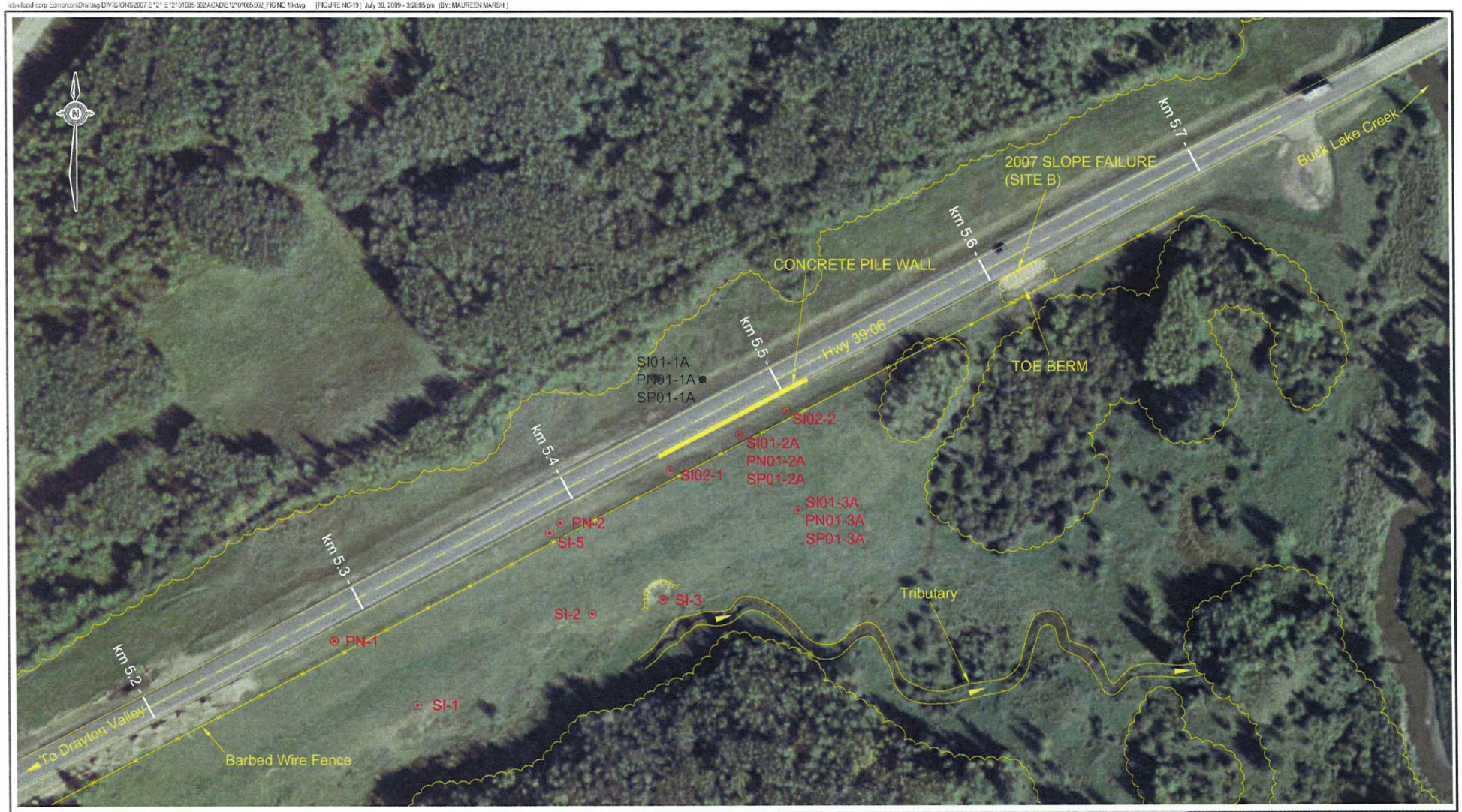
## SITE OBSERVATIONS:

- Cracking was evident along a utility trench approximately 1.5 m north of the barb wire fence at Site A. The cracking followed the pile wall along a straight line.
- The embankment slope failure at km 5.6 (Site B) was repaired in fall of 2007 using a toe berm and installation of gravel drainage layer with perforated pipe wrapped in a geotextile filter.
- Pavement deflection, about 0.3 m from the edge of pavement at Site B, was measured to be about 65 mm in width. This is an increase in the measurement made during 2008 site visit where cracks were measured to be about 10 mm wide.
- Perforated pipes at the base of the Site B toe berm appeared to be dry. The north ditch was also relatively dry. The area had limited spring and summer rainfall prior to the site inspection.

## RECOMMENDATIONS:

- Cracks along the shoulder of the km 5.6 embankment slope should be patched.
- Topsoil and seed or hydroseed top of embankment along km 5.6 where vegetation coverage is poor.
- Continue to monitor km 5.6 after asphalt is patched to assess if settlement along the shoulder continues. This should be done after periods of heavy rainfall.
- If cracking along the pavement continues or accelerates and expands after maintenance conducted at km 5.6, the upslope drainage measures of deep gravel sub-drain not constructed in 2007 should be implemented at an estimated $100,000 to $300,000, including engineering cost.
- The uneven portion of the ditch north of the highway should be graded to prevent water from ponding.




LEGEND:

- ⊙ - INSTRUMENT LOCATION
- ● - INSTRUMENT LOCATION - DESTROYED

SI - SLOPE INCLINOMETER
PN - PNEUMATIC PIEZOMETER
SP - STANDPIPE PIEZOMETER

0 50
Scale: 1: 1 500 (metres)

CLIENT
**Government of Alberta ■ Transportation**

EBA Engineering Consultants Ltd.

**North Central (Stony Plain)**
**Geohazard Risk Management Plan**
**NC-19 Buck Lake Creek, Alberta**

**Site Plan**

| PROJECT NO. | DWN | CKD | REV |
|---|---|---|---|
| E12101085.002 | BR | MW | 0 |
| OFFICE: EDM | DATE: July 2009 | | |

**Figure NC-19**

**Photo 1**
Toe berm site (Site B) located upslope just behind road sign

**Photo 2**
Cracking at edge of pavement at Site B

# SUMMARY OF MAINTENANCE RECOMMENDATIONS
# 2010 GEOHAZARD RISK ASSESSMENT
# NORTH CENTRAL STONY PLAIN REGION

## NC-19 HWY 39:06 SITE B

Based on the observations made during the 2010 GRMP site inspection, the following maintenance procedures should be implemented to improve current slope conditions.

1. Cracks along the shoulder of the km 5.6 embankment slope should be sealed to reduce water infiltration.

2. Topsoil and seed should be applied to the top of the embankment along km 5.6 where vegetation coverage is poor.

Cracking along eastbound lane and top of repaired area.
Poor vegetation growth along top of embankment.

3. If cracking along the pavement continues after maintenance conducted at km 5.6, the upslope drainage measures consisting of deep gravel sub-drain (not constructed in 2007) should be implemented.

4. The uneven portion of the ditch north of the highway should be graded to prevent water from ponding.