



**THURBER** ENGINEERING LTD.

**ALBERTA TRANSPORTATION  
NORTH CENTRAL REGION - EDSON AREA  
INSTRUMENTATION MONITORING RESULTS**

**FALL 2011**

**SECTION C**

**SITE NC34: HWY 40:28 GREGG RIVER  
APPROXIMATELY 13 KM NORTH OF CADOMIN**

**1. OBSERVATIONS**

**1.1 Field Program and Instrumentation Status**

One slope inclinometer (SI04-2) and one pneumatic piezometer (PN04-2) were read at the Highway 40:28 site on September 26, 2011 by Mr. Justin Sousa, C.E.T. and Mr. Francis O'Brien, E.I.T., of Thurber Engineering Ltd. (Thurber).

The SIs were read using a RST Digital Inclinometer probe with 2 ft wheelbase and a RST Pocket PC readout. Inclinometer reading depths were defined as per cable markings with respect to the top of the inclinometer casing. The pneumatic piezometer was read using a RST C108 pneumatic piezometer reader.

**2. INTERPRETATION**

**2.1 General**

SI plots for the A and B directions are presented in Section D and are summarized below. Where movement has been recorded the resultant plot (X direction) has also been provided.

**2.2 Zones of Movement**

Zones of new movement were not observed since the last set of readings in the spring of 2011.



Table NC34-1, at the end of this report, has been set up to provide a historical account of the total movement, the depth of movement, and the maximum rate of movement of the slope during this monitoring program.

### **2.3 Interpretation of Monitoring Results**

Slope inclinometer, SI04-2, showed a decrease in rate of movement of 1.8 mm/yr corresponding to a current rate of movement of 1.9 mm/yr. Table NC34-1 summarizes the readings.

Since the last reading in spring 2011, the water level, in the only functional piezometer (PN04-2), decreased by 1.8 m.

The piezometer data are summarized in Table NC34-2.

## **3. RECOMMENDATIONS**

### **3.1 Future Work**

The instruments should be read again in the spring of 2012.

### **3.2 Instrumentation Repairs**

No repairs are required at this time.



**TABLE NC34-1  
FALL 2011 – HWY 40:28, 13 KM NORTH OF CADOMIN  
SI INSTRUMENTATION SUMMARY**

Date Monitored: September 26, 2011

SI #	DATE REINITIALIZED	TOTAL CUMULATIVE RESULTANT MOVEMENT AND DEPTH OF MOVEMENT TO DATE (mm)	MAXIMUM RATE OF MOVEMENT (mm/yr)	CURRENT STATUS OF SI	DATE OF PREVIOUS READING	INCREMENTAL MOVEMENT SINCE PREVIOUS READING (mm)	CURRENT RATE OF MOVEMENT (mm/yr)	CHANGE IN RATE OF MOVEMENT SINCE PREVIOUS READING (mm/yr)
04-1	Feb. 12, 2004	Negligible movement	N/A	Covered by asphalt	Oct. 11, 2004	N/A	N/A	N/A
04-2	Feb. 13, 2004	30.4 over 0.2 m to 3.3 m depth at 250° direction	97.3 in Jun. 2004	Operational	May 26, 2011	0.6	1.9	-1.8

**TABLE NC34-2  
FALL 2011 – HWY40:28, 13 KM NORTH OF CADOMIN  
PIEZOMETERS READING SUMMARY**

Date Monitored: September 26, 2011

INSTRUMENT #	DATE INITIALIZED	TIP DEPTH (mBGS)	GROUND ELEV. (m)	CURRENT STATUS	MAXIMUM GROUNDWATER LEVEL (mBGS)	MEASURED GROUNDWATER ELEVATION (mBGS) (FALL 2011)	PREVIOUS READING (mBGS) (SPRING 2011)	CHANGE IN GROUNDWATER LEVEL SINCE PREVIOUS READING (m)
SP 04-1	Feb. 13, 2004	N/A	N/A	Covered by asphalt	8.9 m on Oct. 11, 2004	N/A	N/A	N/A
SP 04-3	Feb. 13, 2004	N/A	N/A	Covered by asphalt	2.7 m on Oct. 11, 2004	N/A	N/A	N/A
PN 04-2	Feb. 13, 2004	8.7	N/A	Active	2.1 m on May 25, 2011	3.9	2.1	-1.8

Figures 1A in section D provide a sketch of the approximate location of the monitoring instrumentation for this site.



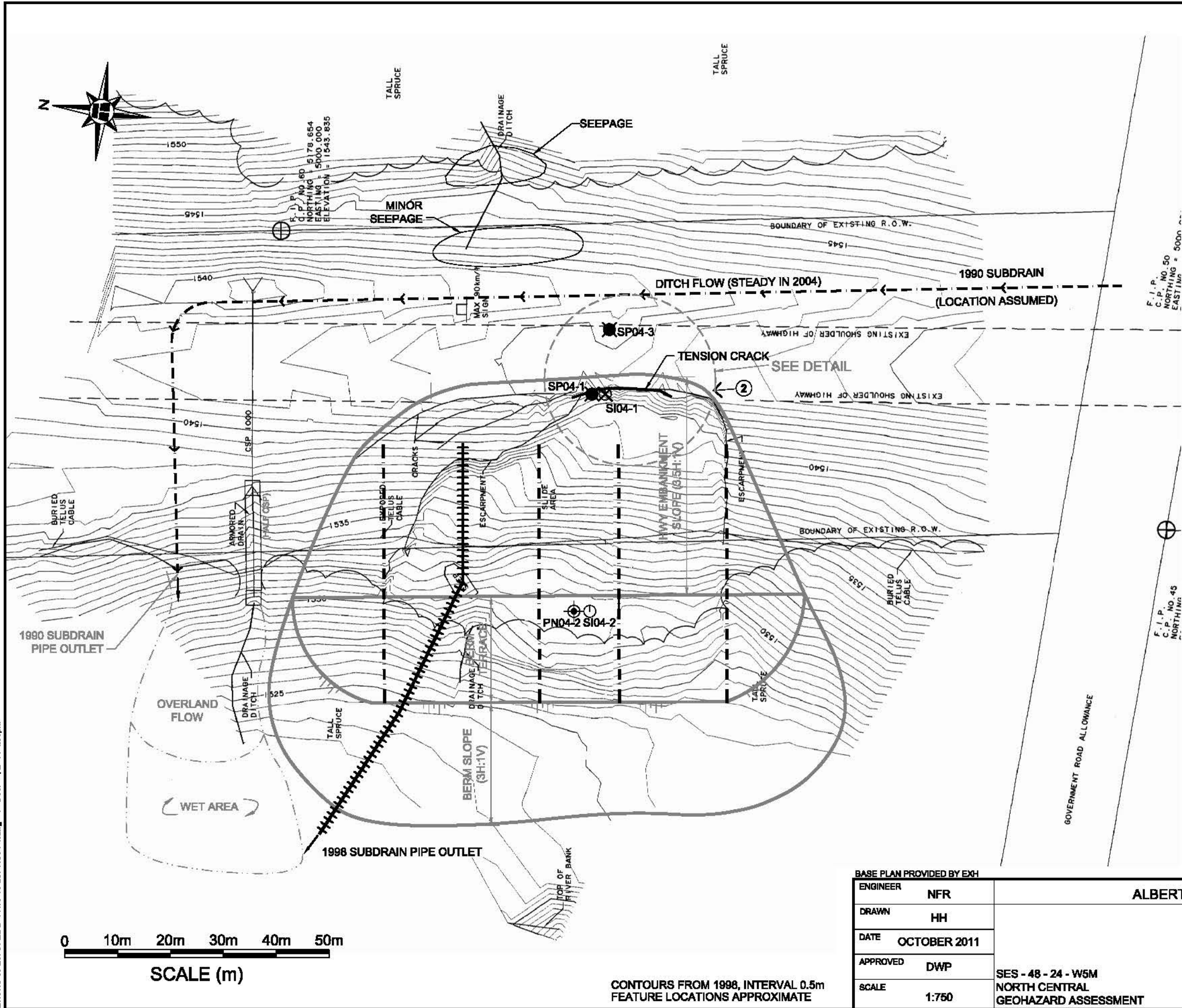
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INSTRUMENTATION MONITORING RESULTS**

**FALL 2011**

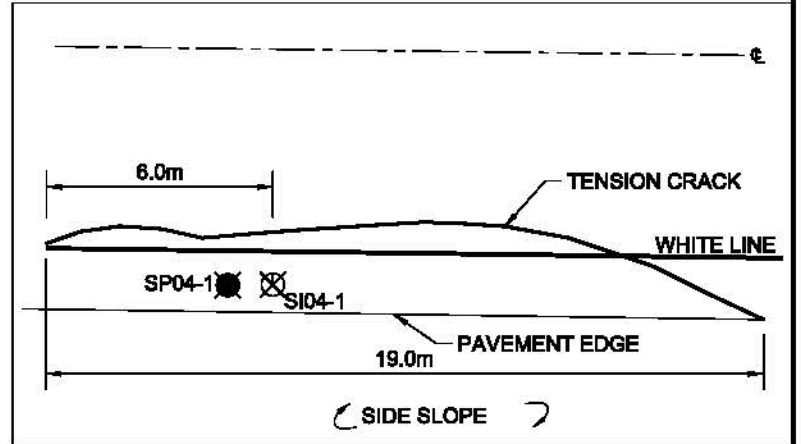
**SECTION D  
DATA PRESENTATION**

**SITE NC34: HWY 40:28 GREGG RIVER  
APPROXIMATELY 13 KM NORTH OF CADOMIN**





- LEGEND**
- ⊙ SLOPE INCLINOMETER
  - ⊕ PNEUMATIC PIEZOMETER
  - STANDPIPE PIEZOMETER
  - ⊗ PREVIOUS TEST PIT COMPLETED IN 1998
  - ||||| PERFORATED SUBDRAIN PIPE (1998)
  - - - FRENCH DRAIN (1998)
  - - - 1990 SUBDRAIN
  - × DAMAGED



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

BASE PLAN PROVIDED BY EXH		ALBERTA TRANSPORTATION		THURBER PROJECT #15-16-257	
ENGINEER	NFR	SITE PLAN		 <b>THURBER</b>	
DRAWN	HH				
DATE	OCTOBER 2011	Km 9 HWY 40:28 (NC34) GREGG RIVER		DRAWING No. <b>FIGURE NC34-1</b>	
APPROVED	DWP				
SCALE	1:750				
SES - 48 - 24 - W5M NORTH CENTRAL GEOHAZARD ASSESSMENT					

Z:\1516-16-257\FALL 2011\15-16-257 NC34-1.dwg - 1 - Dec. 06, 2011 4:38pm

CONTOURS FROM 1998, INTERVAL 0.5m  
FEATURE LOCATIONS APPROXIMATE