

SITE NUMBER AND NAME: NC083 – West of Wildhay River	HIGHWAY AND KM: 40:30, km 37.368	PREVIOUS INSPECTION: July 15, 2021	CURRENT INSPECTION: June 17, 2022
LEGAL DESCRIPTION: SE-08-53-27-W5	NAD83 COORDINATES: UTM11U 5935069N, 437757E		RISK ASSESSMENT: PF: 11 CF: 5 Total: 55
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 1,250 (2021)		CONTRACTOR MAINTENANCE AREA (CMA): 508	

SUMMARY OF INSTRUMENTATION: Three slope inclinometers and three vibrating wire piezometers functional	INSPECTED BY: Stantec: Leslie Cho, Sonja Pharand AT: Rocky Wang, Amy Driessen, Kathleen Davis
LAST READING DATE: May 3, 2022	
PRIMARY SITE ISSUE: Embankment failure due to shallow groundwater levels and weak foundation soils.	
APPROXIMATE DIMENSIONS: 75 m wide. Unclear where the toe is.	
DATE OF ANY REMEDIAL ACTION: Southbound lane (SBL) patched in 2016. SBL patched with 25 tonnes of asphalt in summer 2017.	


ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Cracking over both lanes at intersection with access road. Pavement breaks with rutting around entrance to gravel pit.	X	
Slope Movement	X		Toe bulging along south slope. Semi-circular crack along SBL from BH17-02 to BH17-03. Pavement crack with vertical displacement at shoulder of SBL northwest of BH17-03.		X
Erosion	X		Erosion at Hwy 40 centerline (C/L) culvert outlet. Severe erosion near timber stockpile.	X	
Seepage	X		Seepage on south slope near culvert and at vehicle tracks. Seepage at Hwy 40 C/L culvert inlet.		X
Bridge/Culvert Distress		X			

COMMENTS
<ul style="list-style-type: none"> • No significant changes to site conditions were observed. • Pavement crack pattern appeared mostly unchanged compared to the previous inspection and consisted of: <ul style="list-style-type: none"> – 50 mm high crack along SBL shoulder northwest of BH17-03. Vehicles may be breaking hard as they travel across the crack as evidenced by tire marks on the pavement. – Semi-circular crack along SBL between BH17-02 and BH17-03. – 20 mm wide pavement crack along the alignment of the C/L culvert. – Diagonal crack across all 3 lanes at the entrance to the gravel pit access road. • A new diagonal crack across all 3 lanes was observed near the gravel access road. • Both culverts at the site appear to be in good condition. • The south slope appeared to have a “hummocky” appearance and was soft and spongy to traverse. • An erosion channel about 400 mm wide and deep was observed at the C/L culvert outlet.

- Significantly more erosion features with ponded water were observed near the timber stockpile.
- Seepage was observed at the south slope in the previously observed vehicle tracks.
- All three SIs at the site continues to show movement with movement rates ranging from less than 1 mm/year to 5 mm/year. Piezometric levels remain high ranging from 0.4 m to 0.8 m below ground surface.

RECOMMENDATIONS

- All pavement cracks should be sealed to reduce surface water infiltration into the landslide.
- Riprap or gravel should be placed at the C/L culvert outlet. If the erosion is left unchecked, it could lead to further channeling and embankment movement.
- It is understood that this section of the highway is planned to be widened, and that slope stabilization will be included with the highway widening works. Remediation options could include installing a pile wall along the south edge of pavement or constructing a gravel toe berm south of the highway and/or considering light weight fill for the highway widening work. Any remediation measures undertaken should include drainage measures such as trench drains or drainage blanket underneath the embankment to reduce pore pressure build-up.
- The site should continue to be inspected annually.
- Instrumentation monitoring should continue semi-annually.

PREPARED BY: Sonja Pharand, E.I.T.	PREPARED BY: Leslie Cho, M.Eng., P.Eng.	REVIEWED BY: Xiteng Liu, M.Sc., P.Eng., PMP
		

2022 Site Inspection Photos at NC083



Photo 1: Pavement cracking in SBL. Looking southeast.



Photo 2: Pavement cracking near BH17-02. Looking northwest.

2022 Site Inspection Photos at NC083



Photo 3: Pavement crack along C/L culvert alignment. Looking southwest.



Photo 4: North ditch at C/L culvert inlet. Seepage location circled. Looking southwest.

2022 Site Inspection Photos at NC083



Photo 5: Erosion at C/L culvert outlet. Looking northwest.



Photo 6: Seepage in vehicle track. 300 mm deep track. Looking northeast.

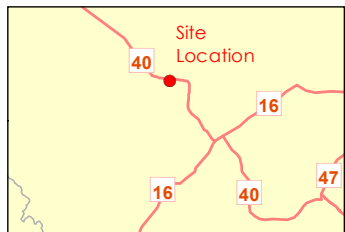
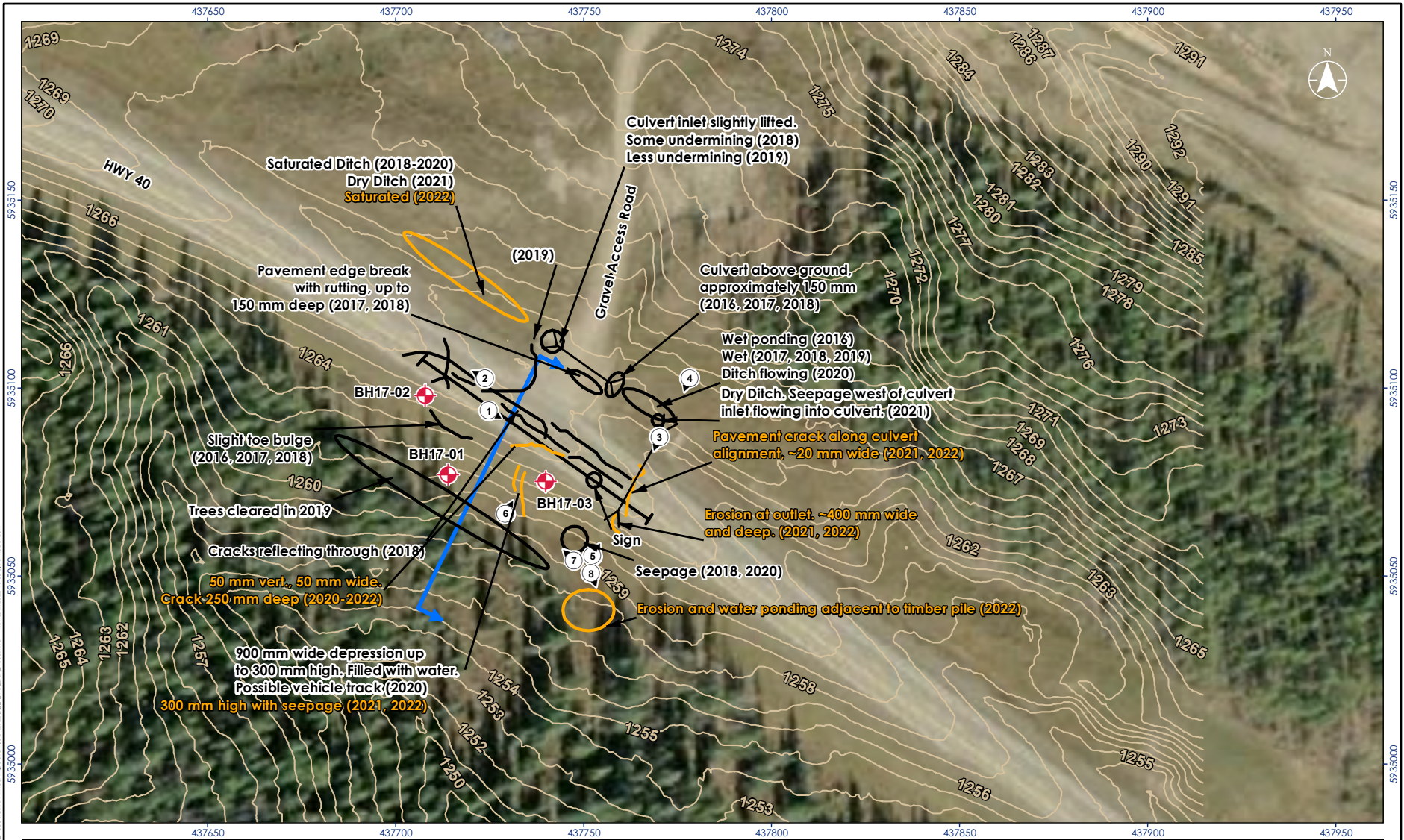
2022 Site Inspection Photos at NC083



Photo 7: Overall view of south slope. Looking northwest.



Photo 8: Erosion and ponded water in tree clearing area. Looking southeast.



- Photo Number and Direction
- Borehole Location
- Approximate Culvert Location
- Previous Observation
- 2022 Observation
- Ground Elevation Contours (m AMSL, LiDAR 2006)
- Cross Section Location

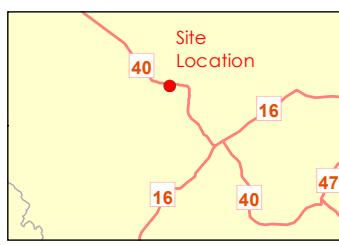
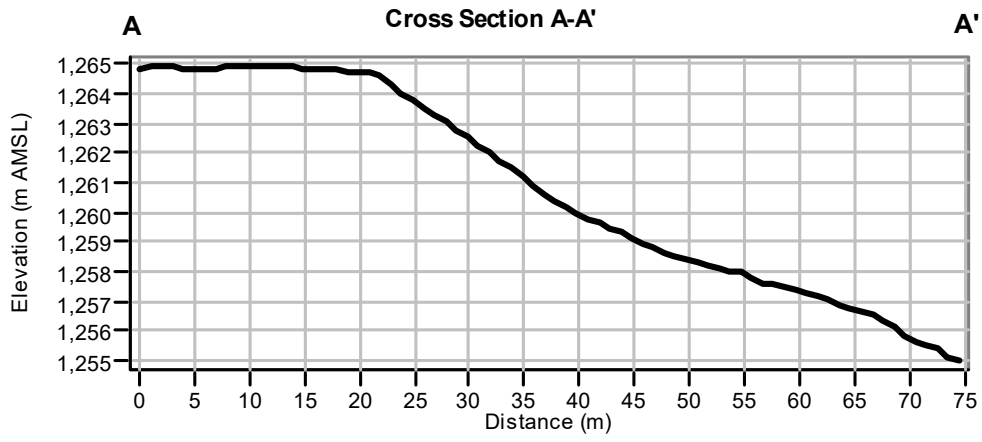


- Notes**
- Coordinate System: NAD 1983 UTM Zone 11N
 - Base features: Geogratis, ©Department of Natural Resources Canada. All rights reserved.
 - Imagery: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Project Location: SE 8-53-27 W5M, Yellowhead County, Alberta
 Prepared by DR on 2022-09-27
 Quality Review by LC on 2022-09-27
 Independent Review by XL on 2022-09-27

Client/Project: Alberta Transportation
 Geohazard Monitoring Program
 NC83 – West of Wildhay River

Figure No.: 1
 Title: **Site Plan**



- Approximate Culvert Location
- Previous Observation
- 2022 Observation
- Ground Elevation Contours (m AMSL, LiDAR 2006)
- Cross Section Location

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Project Location 123315222
 SE 8-53-27 W5M Prepared by DR on 2022-09-27
 Yellowhead County, Alberta Quality Review by LC on 2022-09-27
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Client/Project
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Figure No. 2



Title
 Ground Profile of Section A-A'

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