

<b>SITE NUMBER AND NAME:</b> NC040 – North of N. Sask River	<b>HIGHWAY AND KM:</b> 759:02, km 12.587	<b>PREVIOUS INSPECTION:</b> June 2, 2023	<b>CURRENT INSPECTION:</b> June 14, 2024
<b>LEGAL DESCRIPTION:</b> NE-12-13-50-6-W5 NW-9-14-50-6-W5	<b>NAD83 COORDINATES:</b> UTM11U 5909780 N, 649396 E		<b>RISK ASSESSMENT:</b> PF: 11 CF: 5 Total: 55
<b>AVERAGE ANNUAL DAILY TRAFFIC (AADT):</b> 1,660 (2023)		<b>CONTRACTOR MAINTENANCE AREA (CMA):</b> 509	

<b>SUMMARY OF INSTRUMENTATION:</b> N/A	<b>INSPECTED BY:</b> Stantec: Leslie Cho, Sonja Pharand TEC: Kristen Tappenden, Wilf Cousineau
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**PRIMARY SITE ISSUE:**  
Slope failure of the west embankment along Highway 759. Two slope failures on the east embankment.

**APPROXIMATE DIMENSIONS:**  
West embankment: 50 m wide by 20 m long.  
East embankment: North slide is 25 m wide by 18 m long. Middle slump is about 25 m wide by 10 m long. South slump is about 15 m wide by 5 m long

**DATE OF ANY REMEDIAL ACTION:**  
Two slumps on the east embankment repaired in 2004. Repair consisted of pushing the disturbed slump material downslope to build a toe berm, backfilling the excavated area with compacted clay, and revegetating the disturbed area. Slumps on the east embankment reactivated in 2007, and a new slide was observed on the west embankment. The slide on the west embankment was repaired by regrading in 2007 but reactivated in 2008. It is understood that the west embankment was repaired around 2011, though the method is not known. Another slide activated on the west slope prior to 2023. The slide was regraded prior to winter 2023 to reduce water infiltration into the embankment.

ITEM	CONDITIONS EXIST		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X			X
Slope Movement	X		Embankment failure on west side slope. Multiple embankment failures on east side slope, including new slide.	X	
Erosion		X			X
Seepage		X			X
Bridge/Culvert Distress		X			X

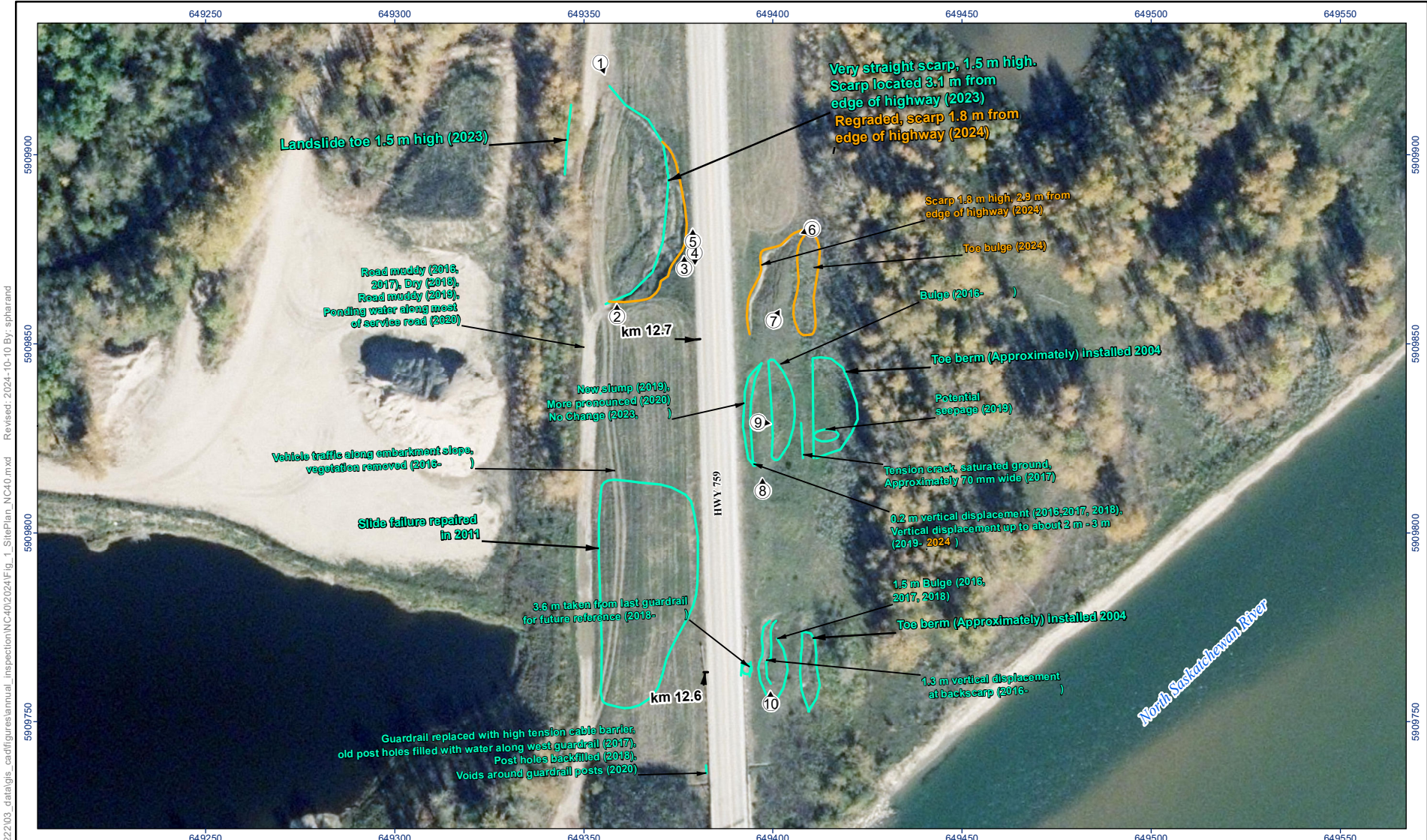
<b>COMMENTS</b>
<ul style="list-style-type: none"> <li>The landslide on the west embankment has been regraded (Photos 1 to 3). The toe is still present and approximately 1.5 m high, though the service road has been re-established. The repaired scarp is 1.8 m from the edge of the highway.</li> <li>Two samples of the soil were taken from the regraded area of the west embankment for lab testing. The results will be used in the Section F design. The test results indicated high plastic clay and silt material.</li> </ul>

- No landslide related pavement cracks were observed along the highway as shown on Photos 4 and 5.
- The surrounding embankment slopes were at approximately 3H:1V and were well-covered with grass. Wheel tracks continue to be observed about one-third of the way up the embankment.
- A new landslide is present at the north end of the east embankment. The scarp was measured to be up to 1.8 m high and 2.9 m from the edge of the highway at its closest point. The toe bulge appears to be pushing against the shrubs, upslope from the tree line (Photos 6 and 7).
- Little to no change was observed at the other two embankment failures on the east side slope since Stantec's previous call-out inspection in 2023 (Photos 8 to 10).
- The crest of the south slump on the east side slope was measured to be 3.6 m from the guardrail at its closest point since 2018. The backscarp appears more vegetated from the previous inspection in 2023 (Photo 10).
- Seepage was not observed on either side of the embankment.

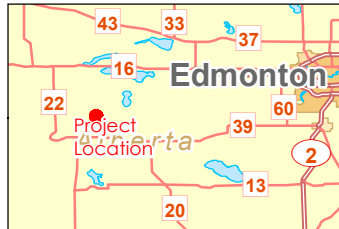
**RECOMMENDATIONS**

- In the short-term, erosion control blankets should be placed on the regraded landslide surface on the west embankment, and the area should be reseeded for temporary erosion control. The landslide is about 175 m away from the North Saskatchewan River and sedimentation into the river during major precipitation events is a possibility.
- At the time of the site inspection, Stantec had been preparing a Section F remediation design of the west embankment slope. The preferred remediation option was understood to be removal and replacement. It was discussed with TEC on site that the east embankment slope could be repaired with the same approach and is to be added to Stantec's current remediation design work.
- Site inspections should continue annually.

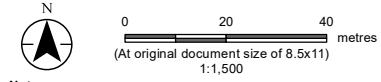
<b>PREPARED BY:</b> Sonja Pharand, P.Eng.	<b>REVIEWED BY:</b> Xiteng Liu, M.Sc., P.Eng., PMP	<b>PERMIT TO PRACTICE:</b>



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- Previous Observation
- 2024 Observation
- Ground Elevation Contours (LiDAR 2013)
- Photo and Direction



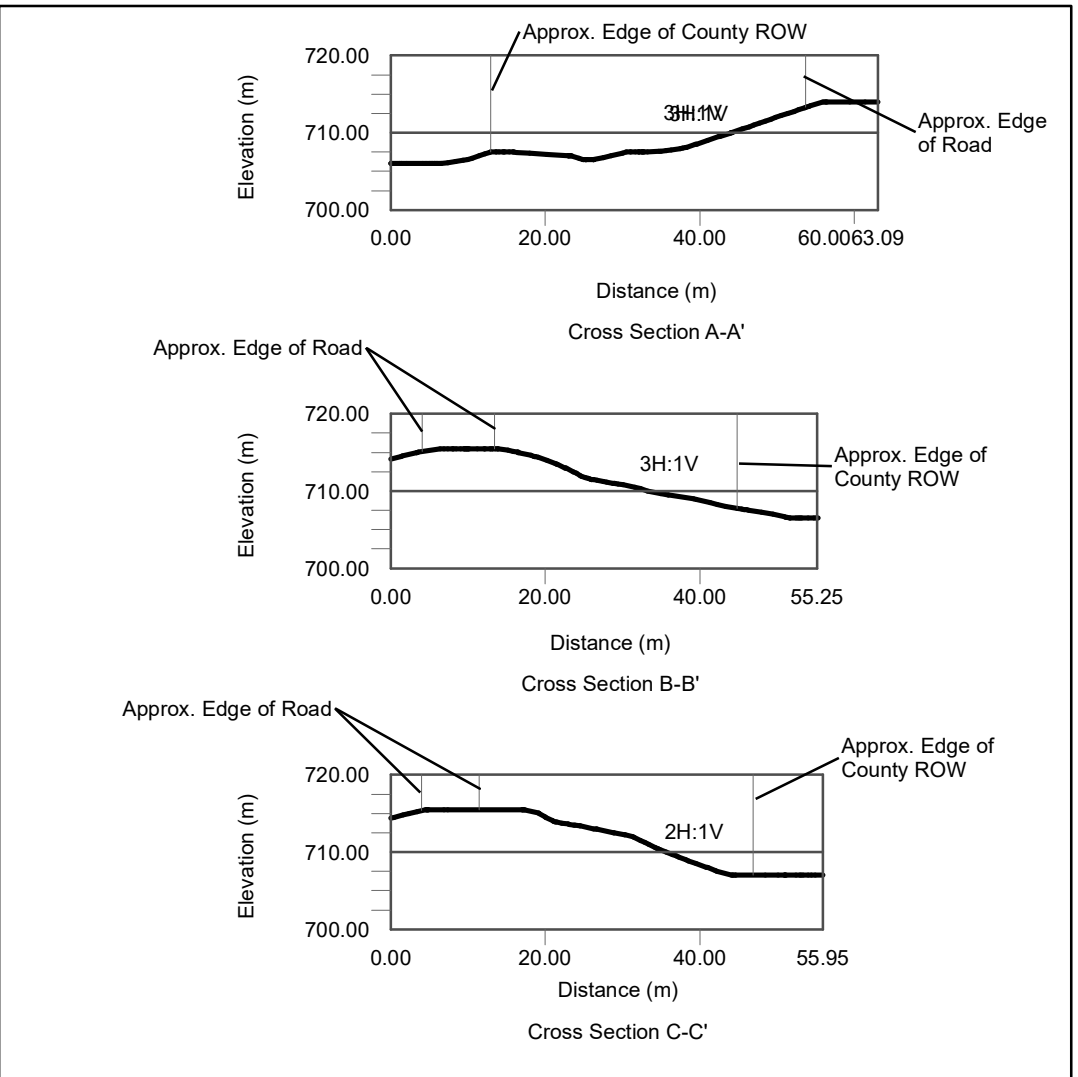
- Notes**
1. Coordinate System: NAD 1983 CSRS UTM Zone 11N
  2. Data Sources: Geogratis, ©Department of Natural Resources Canada,
  3. Background: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community (Brazeau County 2020)

Project Location Parkland County, Alberta	Prepared by SP on 2024-10-06 QR by LC on 2024-10-06 IR by XL on 2024-10-06
Client/Project Transportation and Economic Corridors Geohazard Monitoring Program NC040 Hwy 759:02, North of North Saskatchewan River	123315222
Figure No. <b>1</b>	
Title <b>Site Plan</b>	

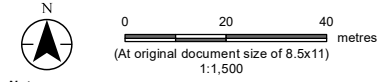
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— Ground Elevation Contours (LiDAR 2013)  
 ◆ Cross Section



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**Project Location**  
 Parkland County,  
 Alberta

Prepared by SP on 2024-10-06  
 OR by LC on 2024-10-06  
 IR by XL on 2024-10-06

**Client/Project**  
 Transportation and Economic Corridors  
 Geohazard Monitoring Program  
 NC040 Hwy 759:02, North of North Saskatchewan River

123315222

**Figure No.**  
**2**

**Title**  
**Ground Profile**



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2024 Inspection Photos at NC040



**Photo 1:** Failure at north extent of west side slope. Service road at landslide toe has been opened up. Looking south.



**Photo 2:** Failure at south extent of west side slope. Looking north.



2024 Inspection Photos at NC040



**Photo 3:** Backslope of failure regraded since previous inspection. Looking north.



**Photo 4:** Highway surface above west sideslope failure. Looking southeast.



2024 Inspection Photos at NC040



**Photo 5:** Highway surface above west sideslope failure. Looking northeast.



**Photo 6:** New slump on north end of east sideslope. Looking southwest from toe.



2024 Inspection Photos at NC040



**Photo 7:** Toe bulge of northern slump on east sideslope. Looking northeast.



**Photo 8:** Middle slump on east sideslope, little change. Looking north.



2024 Inspection Photos at NC040



**Photo 9:** Bulging apparent on east sideslope at middle slump. Looking east, downslope.



**Photo 10:** South slump on east sideslope relatively unchanged. Looking north.