

## GEOHAZARD RISK MANAGEMENT PROGRAM

### North Central Region – Edson / Stony Plain Area

#### 2020 Inspection Report

Site Number	Site Name	Hwy	km
NC44	Cattlepass East	633:02	1.5
Legal Land Description	NW 29-53-6-W5M		
UTM Coordinates (NAD 83)	Zone 11N	N5942545	E642834
Operational Site Instrumentation	Slope Inclinometers	2	
	Pneumatic Piezometers	1	
	Vibrating Wire Piezometers	2	
	Standpipe Piezometers	0	
Date of Last Instrumentation Readings	May 20, 2020		

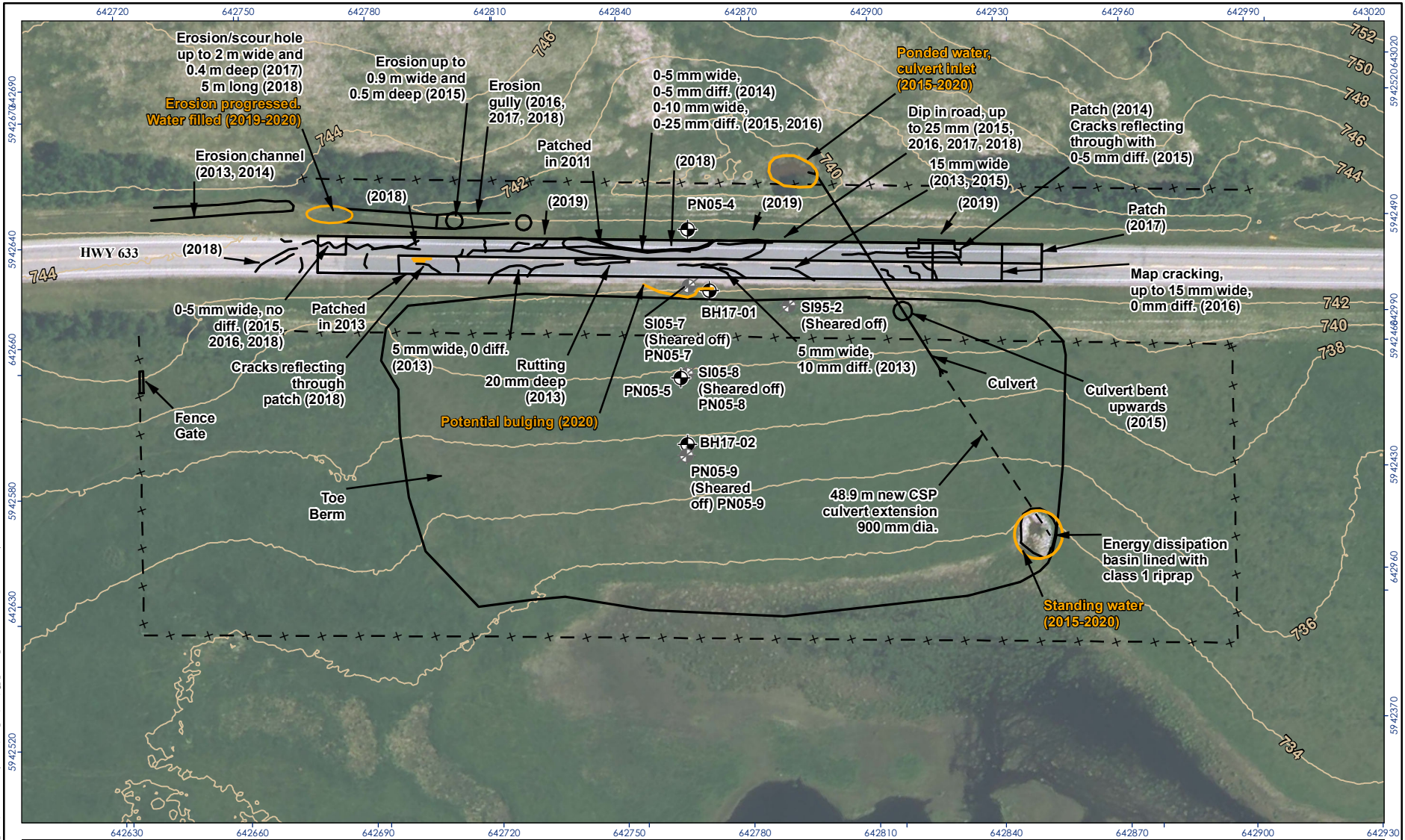
Risk Assessment	Date	PF	CF	Risk Ranking
Current Inspection	May 25, 2020	9	4	36
Previous Inspection	May 16, 2019	9	4	36
Report Attachments	<input checked="" type="checkbox"/> Photographs (8 Photos)		<input checked="" type="checkbox"/> Site Plan (1 Page)	

	Stantec	Alberta Transportation
Inspected By	Leslie Cho	Kristen Tappenden and Kathleen Davis
Date of Remediation	Toe berm constructed in 2011	
Recent Maintenance	Pavement overlaid in September 2013. Westbound lane patched in 2014.	

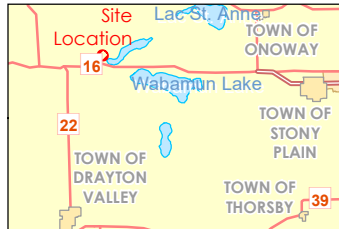
	Westbound lane and parts of eastbound lane patched in June 2017.		
<b>Primary Site Issue</b>	Slope instability due to relatively high embankment over soft ground with shallow groundwater level.		
<b>Observations</b>	<b>Description and Location</b>	<b>Change from Previous Inspection</b>	
<input checked="" type="checkbox"/> Pavement Distress	New cracks in overlay.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input checked="" type="checkbox"/> Culvert Distress	Ponded water at both ends of the culvert. Culvert inlet submerged in the north.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> Bridge Distress		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input checked="" type="checkbox"/> Slope Movement	Pavement cracks along highway	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input checked="" type="checkbox"/> Erosion	Erosion gully along the north ditch near west end of pavement patch.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
<input type="checkbox"/> Seepage		<input type="checkbox"/> Yes	<input type="checkbox"/> No
<input type="checkbox"/> Other		<input type="checkbox"/> Yes	<input type="checkbox"/> No

<b>Discussion</b>	<p>The westbound lane and parts of the eastbound lane on Highway 633 was last overlaid in mid-June 2017. The cracking pattern on the highway appeared mostly similar to the previous inspection as shown in Photos 1 to 4. A new crack had developed upslope from BH17-01 and SI05-7 and is shown in Photo 3. Potential toe bulging was observed downslope from this crack as shown in Photo 5.</p> <p>Standing water was observed at both ends of the culvert as shown in Photos 6 and 7. There appears to be little grade for water to drain from the culvert outlet.</p> <p>The berm was grass covered with no visible signs of distress observed.</p> <p>Erosion is ongoing in the north ditch as shown in Photo 8.</p>
<b>Assessment</b>	<p>Pore water pressures at this site remain high with PN05-8 showing artesian conditions at 0.1 m above ground surface. A general trend of increasing pore pressures can be seen since about 2011.</p> <p>Reflection of the cracks through the overlay in previous years suggests that slope movement is ongoing. This is further evidenced by increased movement recorded in SI17-01 at a depth of about 10 m below ground surface. On-going movement may be due to the high pore pressures at the site. A possible source of water infiltration into the slope is through the erosion channel on the north ditch. The ponded water on both ends of the culvert may also be allowing water to infiltrate the slope.</p>

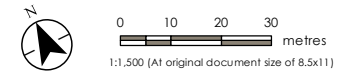
<b>Recommendations</b>	<p>Short term recommendations include sealing of any cracks to reduce surface water infiltration into the slope and pavement structure. The culverts at the site should be inspected on a regular basis to reduce the risk of pore pressures building up in the berm and slope and to maintain functionality. Grading may be considered at the culvert inlet to reduce the amount of ponded water. The erosion gully in the north ditch should be repaired to reduce seepage of water into the slope and under the highway.</p> <p>Long term recommendations may consist of lowering the overall highway grade to reduce the driving force on the slope. Alternatively, reconstruction of the highway using lightweight fill may also help reduce the driving force on the slope.</p> <p>Site inspections should be completed annually. Instrumentation monitoring should be completed semi-annually.</p>
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- Borehole Location
- Non-Operational Instrument
- Previous Observation
- 2020 Observation
- Fence
- Ground Elevation Contours (m AMSL, LiDAR May 2015)



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

Project Location: Hwy 633, Parkland County, Alberta  
 Prepared by MK on 2020-06-11  
 Quality Review by LC on 2020-06-19  
 Independent Review by XL on 2020-06-19

Client/Project: Alberta Transportation  
 Geohazard Monitoring Program  
 NC44 Cattle Pass East

Figure No.: 1  
 Title: Site Plan



Reference: 2020 Annual Inspection Photographs at NC44 – Cattlepass East  
File Number: 123312435

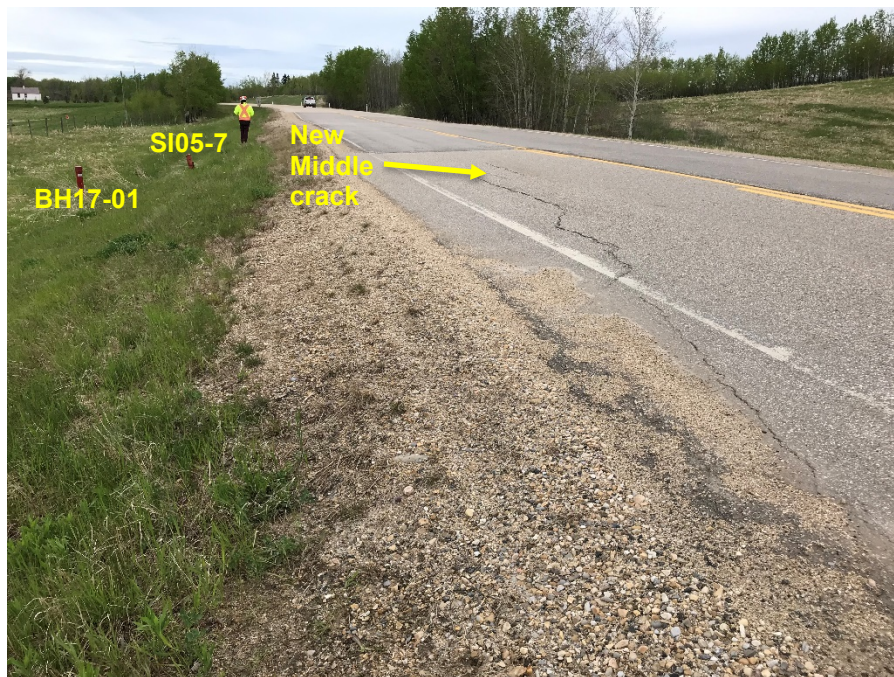


**Photo 1:** Pavement cracks at east limits of 2017 patch. Looking west.



**Photo 2:** Pavement cracks along Highway 633. Looking west.

Reference: 2020 Annual Inspection Photographs at NC44 – Cattlepass East  
File Number: 123312435

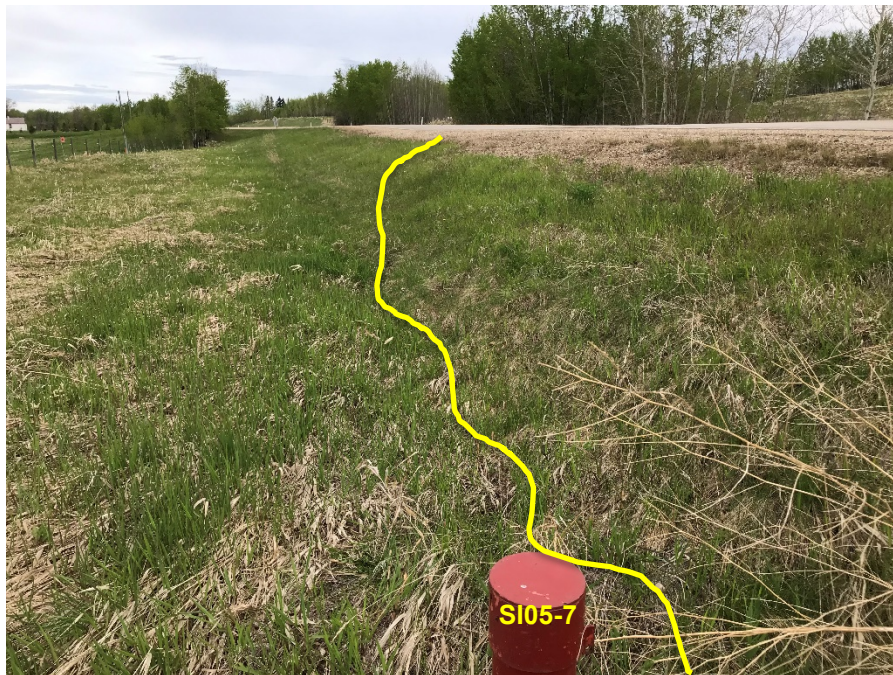


**Photo 3:** Pavement cracks along Highway 633. Looking west.



**Photo 4:** Pavement cracks at west limits of 2017 patch. Looking west.

Reference: 2020 Annual Inspection Photographs at NC44 – Cattlepass East  
File Number: 123312435



**Photo 5:** Potential bulging near SI05-7. Looking west.



**Photo 6:** Ponded water at culvert inlet in the north. Looking northeast.

Reference: 2020 Annual Inspection Photographs at NC44 – Cattlepass East  
File Number: 123312435



**Photo 7:** Ponded water at culvert outlet in the south. Looking south.



**Photo 8:** Erosion gully along north ditch of Highway 633. Looking west.