

SITE NUMBER AND NAME: NC101 – Highway 658 Embankment Fill Slide	HIGHWAY AND KM: 658:02, km 13.382	PREVIOUS INSPECTION: N/A	CURRENT INSPECTION: May 31, 2023
LEGAL DESCRIPTION: NW 11-60-10-W5M	NAD83 COORDINATES: UTM11U 6004423N, 604544E		RISK ASSESSMENT: PF: 5 CF: 2 Total: 10
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 360 (2022)		CONTRACTOR MAINTENANCE AREA (CMA): 508	

SUMMARY OF INSTRUMENTATION: No instrumentation.	INSPECTED BY: Stantec: Leslie Cho and Sonja Pharand TEC: Rocky Wang and Amy Driessen
PRIMARY SITE ISSUE: Erosion gullyng within west ditch. Old scarp on east side of highway.	
APPROXIMATE DIMENSIONS: Old scarp: 30 m long x 15 m wide	
DATE OF ANY REMEDIAL ACTION: The centerline (C/L) culvert was grouted in place and the ditch block was partially removed in 2020.	


ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICEABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Two small cracks on southbound lane (SBL) south of the C/L culvert.	N/A (no past inspection)	
Slope Movement	X		Old scarp present on east side of highway.		
Erosion	X		Erosion gullyng in the west ditch.		
Seepage		X			
Bridge/Culvert Distress		X			

COMMENTS
<ul style="list-style-type: none"> Two small pavement cracks (< 0.5 m in length, 1 mm wide) were observed in the SBL on the south side of the grouted C/L culvert alignment. Remnants of the old ditch block south of the culvert inlet were observed in the west ditch. The material contains some exposed cobbles and is poorly vegetated. Erosion rills have formed from the pavement down into the ditch (Photo 1 and 2). An erosion gully up to 0.9 m wide and 0.5 m deep has formed through the old ditch block area (Photo 1 and 2). Silt fencing was installed on the east side of the old ditch block parallel to the highway likely intended to reduce erosion while vegetation was establishing. The silt fence was observed to be toppled. The west ditch to the north of the old ditch block is well vegetated with no observed erosion or ponding water (Photo 3). Erosion gullyng up to 0.5 m wide continued through the west ditch and extended about 90 m south from the old ditch block location. There was occasional ponding through the west ditch, and exposed cobbles (Photo 4). TEC documentation suggests this ditch was once armoured with cable concrete protection. Staples were observed at regular intervals through the west ditch suggesting alternative forms of erosion protection were installed; however, it was not apparent which erosion control product is currently installed.

- An old, vegetated landslide exists on the east side of the highway, just south from where the C/L culvert used to outlet (Photo 5).
- The old scarp was up to 1.3 m high and runs from south of the old culvert outlet to a few meters beyond the power pole (Photo 6).
- The scarp is within a meter of the power pole, which appears to be leaning east at approximately 10-15° (Photo 6).

RECOMMENDATIONS

- Pavement cracks should be sealed to reduce surface water infiltration into the embankment.
- Regrading of the west ditch from the old ditch block down to the next culvert inlet location should be performed. Erosion protection (possibly consisting of re-vegetation and/or rock check dams) should also be considered. The estimated cost of installing rock check dams is \$5,000 to \$10,000 excluding engineering.
- No further site visits are recommended.

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

2023 Site Inspection Photos at NC101



Photo 1: Erosion gully through the old ditch block with erosion rills into the ditch. Looking south.



Photo 2: Erosion gully and remnants of old ditch block, looking north.

2023 Site Inspection Photos at NC101



Photo 3: West ditch to the north from the old ditch block. Looking north.



Photo 4: West ditch south from the old ditch block with gulying and exposed cobbles. Looking south.

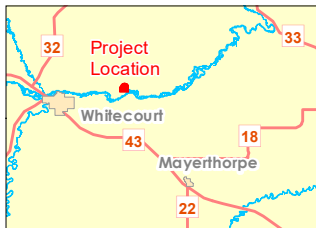
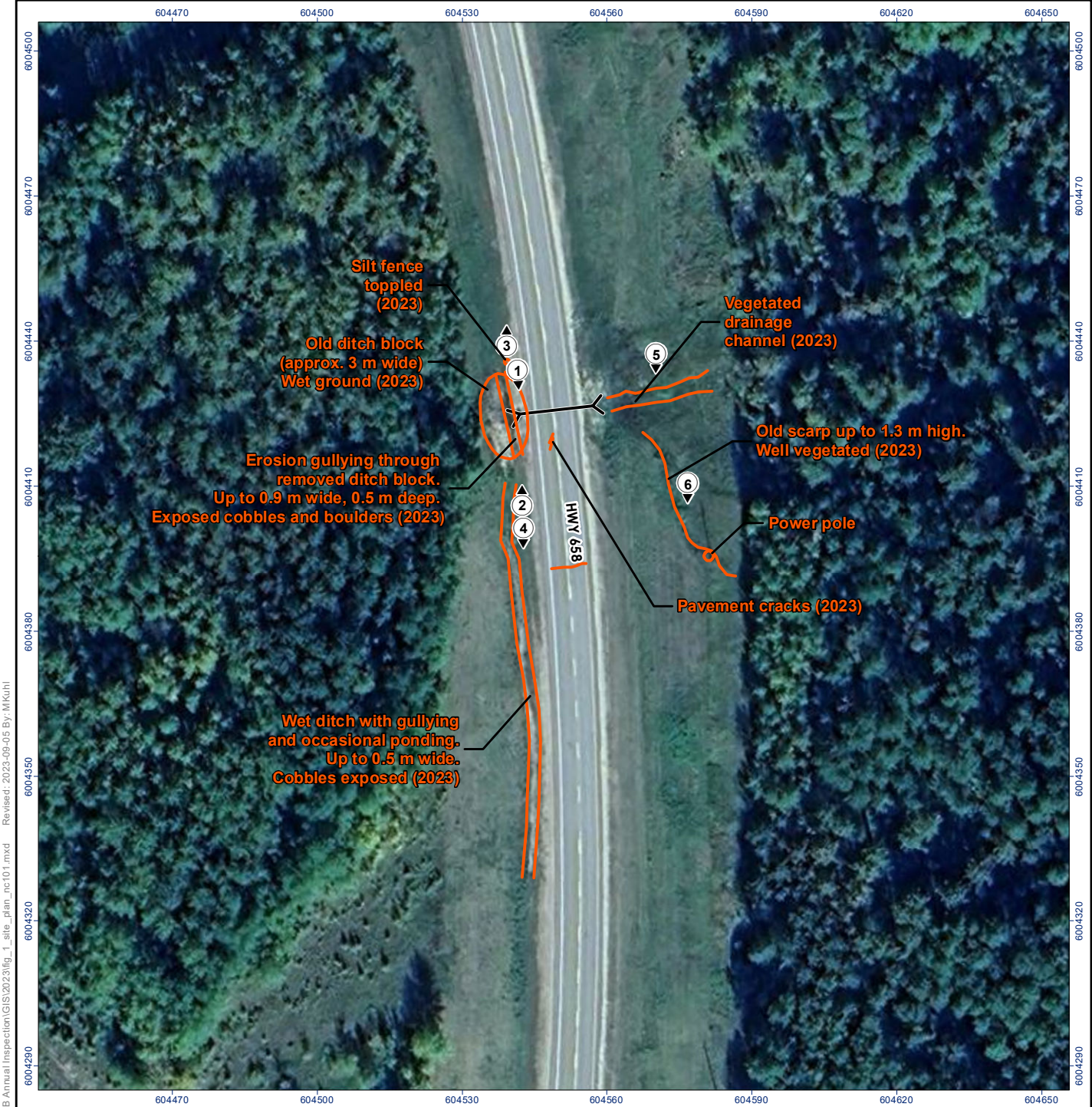
2023 Site Inspection Photos at NC101






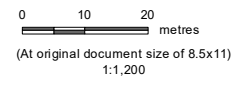
Photo 5: Old landslide east of Highway 658, looking south.



Photo 6: Old scarp and leaning power pole. Looking southeast.



-  Photo Number and Direction
-  2023 Observation
-  Approximate Location of Grouted Culvert



Project Location: NW-11-060-10 W5M, Alberta
 Prepared by MK on 2023-07-20, TR by LC on 2023-08-29, IR by XL on 2023-08-29

Client/Project: Transportation and Economic Corridors, Geohazard Monitoring Program, Highway 658:02, km 13.382
 123315222

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

- Notes**
1. Coordinate System: NAD 1983 UTM Zone 11N
 2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
 3. Imagery: Google Earth, 2022-09-10.

I:\cd\001-c200\workgroup\1233\active\1233124\35\INC Sites_NCI1011\Task B Annual Inspection\GIS\2023\fig_1_site_plan_nc101.mxd Revised: 2023-09-05 By: MKuhl

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.