

SITE NUMBER AND NAME: C076 East of Bleriot Ferry		HIGHWAY & KM: 838:02, 22.212	PREVIOUS INSPECTION DATE: November 17, 2023 (post-construction)	INSPECTION DATE: June 18, 2024
LEGAL DESCRIPTION: 6-15-30-21-W4	NAD 83 COORDINATES: UTM Northing Easting 12 5714409 369753		RISK ASSESSMENT: PF: 11 CF: 2 TOTAL: 22	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 200 (east) & 180 (west) (Ref No. 107250 & 109260)			CONTRACT MAINTENANCE AREA (CMA): 517	

SUMMARY OF SITE INSTRUMENTATION: There is no instrumentation at the C076 site. LAST READING DATE: N/A	INSPECTED BY: Chris Gräpel (KCB) James Lyons (KCB) Tony Penney (TEC) Rocky Wang (TEC)
PRIMARY SITE ISSUE: Ditch erosion in the north and south (westbound and eastbound, respectively) ditches, exacerbating by steep ditch grades and dispersive soil at the site.	
APPROXIMATE DIMENSIONS: Ditch erosion is occurring along approximately 600 m of Hwy 838:02, east of Bleriot Ferry in the north and south highway ditches. Erosion gullies are approximately 1 m to 5 m deep and 2 m to 5 m wide (deepest and widest erosion gullies are along the last 100 m of the north (westbound) ditch).	
DATE OF ANY REMEDIAL ACTION: July – October 2023 – as part of the H838 overlay project, the erosion gullies in the north and south ditches were backfilled with compacted granular fill and armoured with a rolled erosion control product (RECP).	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	N/A – none observe during 2024 inspection.		X
Slope Movement	X		Slope failure on the south valley slope is depositing material into the south (eastbound) ditch	X	
Erosion	X		Erosion features (including sinkholes) were observed to be forming beneath the RECP, primarily in the north (westbound) ditch	X	
Seepage	X		Seepage observed at the toe of the south natural slope at the location of the slope failure impacting the south (eastbound) ditch	X	
Culvert Distress		X	N/A – no culverts at the C076 site.		X

COMMENTS

In 2023, between July and October, the site was repaired as part of a highway improvement project (TEC Contract No. CON0022440). The consultant was Tetra Tech Canada Ltd., the Prime Contractor was Ledcor, and the subcontractor who completed the C076 repair was In-Line. As TEC's geotechnical consultant for Central Region, KCB was on-site part time to monitor the C076 repair work. The design work was completed by KCB in late-2022.

North (Westbound) Ditch:

- The east portion of the repair (including the ditch block and the upstream ditch) appears to be in good condition (Photo 1 and 2). Overall, there is poor vegetative cover, but are lengths of the ditch side slopes where grass has begun to grow.

- The repair west of the ditch block (approximately 330 m) is in satisfactory condition, excluding the following:
 - At least two sinkholes were observed downstream (west) of the ditch block (Photo 4 and 6). During the inspection, KCB installed a stake on the north ditch side slope at one of the sinkholes to indicate its location (Photo 4). The downstream sinkhole (Photo 6) was partially filled with water during the inspection. It is unknown if its being filled from surface water flow or from subsurface flow beneath the ditch.
 - Portions of the RECP are damaged and are being undermined (Photos 5, 7, and 8). The damaged RECP is along the steeper portion of the north ditch, approximately 100 m long, where the overall grade increases to be approximately 20%.

South (Eastbound) Ditch:

- The 2023 repair is in good condition, excluding the following:
 - There is poor vegetative growth along the repair (Photos 9 through 14).
 - Between the November 2023 and June 2024 inspections, failed material from the south natural slope (existing slide) has slumped into the south ditch and is partially blocking the ditch (Photo 11 and 12). The length of impacted ditch is approximately 50 m long. Seepage has been observed at the toe of the slope during previous inspections and during 2023 construction. A trench was excavated during construction to divert seepage to the ditch bottom but appears to be ineffective as seepage was observed flowing overtop the failed material upstream (east) of the trench.
 - The RECP is being undermined at the downstream (west) extent of the repair (Photo 14).

Maintenance/Repair/Monitoring Recommendations:

- The site should continue to be regularly inspected by TEC's Maintenance Contract Inspector (MCI) and TEC and KCB should be notified if they observe any changes to the site.
- The site should be inspected every two years as part of the Central Region GRMP Section B Inspections.
- A compacted granular fill berm should be built in the south (eastbound) ditch to stop failed material from the south natural slope from slumping into and blocking the ditch. The berm should be at least 50 m long, 1.5 m tall, 3 m wide, with 3H:1V side slopes. Drainage improvements (e.g., finger drain along the base of the berm) should also be included as part of the repair work to convey seepage at the toe of the slope to the ditch bottom.
- In the north (westbound) ditch, where the RECP is being undermined, or where sinkholes have formed, the RECP should be removed. The erosion gullies/sinkholes should be backfilled with compacted well-graded granular fill, and new RECP should be installed.

This report is an instrument of service of Klohn Crippen Berger Ltd. (KCB). The report has been prepared for the exclusive use of Alberta Transportation and Economic Corridors (Client) for the specific application to the Central Region Geohazard Risk Management Program (Contract No. CON0022160) and it may not be relied upon by any other party without KCB's written consent.

KCB has prepared this report in a manner consistent with the level of care, skill, and diligence ordinarily provided by members of the same profession for projects of a similar nature at the time and place the services were rendered. KCB makes no warranty, express or implied.

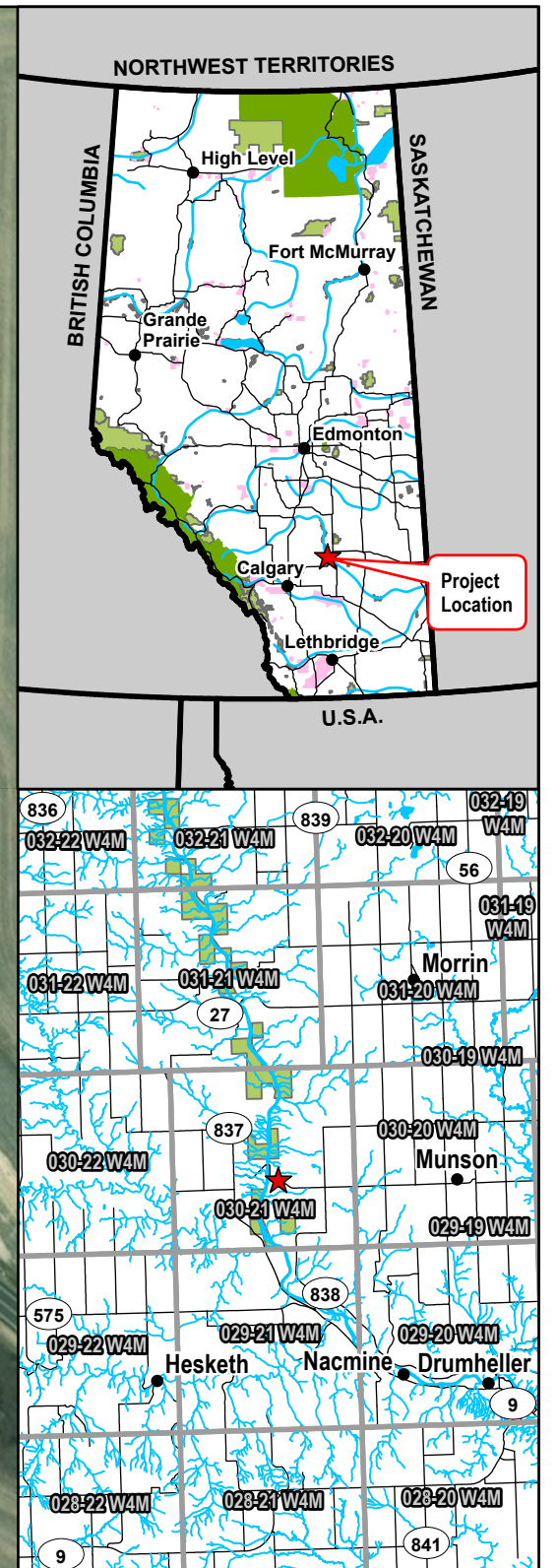
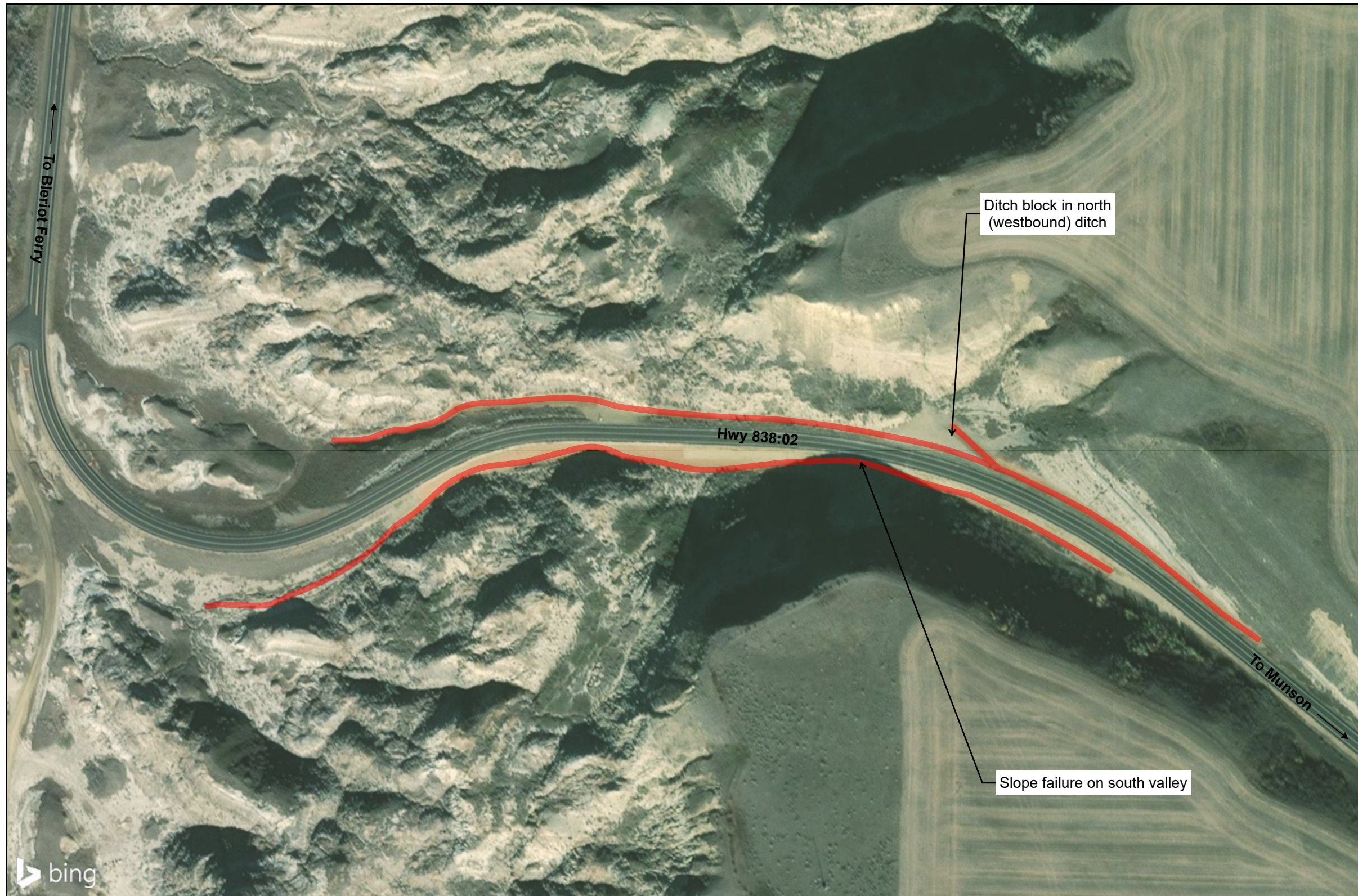
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- (i) The report is to be read in full, with sections or parts of the report relied upon in the context of the whole report.
- (ii) The observations, findings and conclusions in this report are based on observed factual data and conditions that existed at the time of the work and should not be relied upon to precisely represent conditions at any other time.

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James Lyons, P.Eng.
Civil Engineer

File: Z:\A\EDM\A05116A02\ABT_Central Region GRIP\400 Drawings\GIS\02_ProFiles\2024\Section B\AT_CentralRegion_SectionB_240627\AT_CentralRegion_SectionB_240627.aprx Date: Time: Creator: EQuine



Legend
— Ditch erosion/2023 repair extents

NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 12N
 3. IMAGE SOURCE: 2024 MICROSOFT CORPORATION, MAXAR, CNES DISTRIBUTION AIRBUS DS.

CLIENT

Alberta

Klohn Crippen Berger

PROJECT
 CENTRAL REGION GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
 Site Plan
 C076 - East of Bleriot Ferry Erosion
 Hwy 838:02

SCALE 1:2,500 PROJECT No. A05116A02 FIG No. 1

North (Westbound) Ditch:

Photo 1 Repair near the east end of the north ditch repair appears to be in good condition and some vegetation growth was observed. Photo taken June 18, 2024, facing east.



Photo 2 Repair upslope of the ditch block in the north ditch appears to be in good condition and some vegetation growth was observed. Photo taken June 18, 2024, facing west.



Photo 3 Condition of the north ditch repair downstream (west) of the ditch block. Photo taken June 18, 2024, facing northeast.



Photo 4 KCB installing a wooden stake to indicate the location of an observed sinkhole on the north ditch side slope. Photo taken June 18, 2024, facing north.



Photo 5 **Damage to the rolled erosion control product (RECP) observed in the north ditch.**
Photo taken June 18, 2024, facing east.



Photo 6 **Sinkhole partially filled with water observed in the north ditch, upstream of the steep section at the west extent of the repair, downstream of a draw on the natural slope north of the ditch. Photo taken June 18, 2024, facing west.**



Photo 7 **Damage to the RECP observed in the north ditch, where the ditch grade steepens to approximately 20%. Photo taken June 18, 2024, facing east.**



Photo 8 **Undermining of the RECP observed in the north ditch near the west extent of the repair. Photo taken June 18, 2024, facing east.**



South (Eastbound) Ditch:

Photo 9 The east extent of the south ditch repair. A small amount of grass is growing on the south ditch side slope. Photo taken June 18, 2024, facing east.



Photo 10 The repair appears to be in good condition near the east extent of the south ditch repair. Photo taken June 18, 2024, facing west.



Photo 11 Between the October 2023 post-construction site visit and June 2024 inspection, failed material from the steep and tall natural slope has slumped into the south ditch, partially blocking the ditch and constricting flow. Photo taken June 18, 2024, facing southwest.



Photo 12 Failed material partially blocking the south ditch. Drainage trench excavated during 2023 construction appears ineffective at conveying seepage from the toe of the slope to the ditch. Photo taken June 18, 2024, facing east.



Photo 13 The repair along the west portion of the south ditch repair appears to be in good condition. Photo taken June 18, 2024, facing east.



Photo 14 Erosion is ongoing at the outlet of the south ditch repair and is beginning to undermine the RECP. Photo taken June 18, 2024, facing east.

