



**PEACE REGION
(GRANDE PRAIRIE DISTRICT – SOUTH) GRMP**



SITE INSPECTION FORM

SITE NUMBER AND NAME: GP017 Grande Cache Lake Slide		HIGHWAY & KM: 40:34, 26.680	PREVIOUS INSPECTION DATE: October 12, 2021	INSPECTION DATE: June 12, 2023
LEGAL DESCRIPTION: SW 12-57-08-W6M	NAD 83 COORDINATES: UTM Northing Easting 11 5974943 364960		RISK ASSESSMENT: PF: 9 CF: 8 TOTAL: 72	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 1,400 (west) & 1,300 (east) (Reference No. 70000983, 2022)			CONTRACT MAINTENANCE AREA (CMA): 504	

SUMMARY OF SITE INSTRUMENTATION: There is no instrumentation at the GP017 site. LAST READING DATE: N/A	INSPECTED BY: Chris Gräpel (KCB) Courtney Mulhall (KCB) Roger Skirrow (TEC) Max Shannon (TEC) Renato Macciotta (UofA)
PRIMARY SITE ISSUE: Slide in 15-m high highway embankment fill on south side of Hwy 40:34 above Grande Cache Lake and adjacent to (northeast of) a previous slide repair completed in 2002 as described below. Most recent slide area is a sliver fill on a steep slope (approximately 30°) with poor vegetation cover. Slide area being eroded by surface water flow over edge of pavement.	
APPROXIMATE DIMENSIONS: approximately 15 m wide at edge of pavement and 9 m wide near gabion wall, and 10 m high.	
DATE OF ANY REMEDIAL ACTION: 2002 – excavation/removal of slide mass, construction of bench/toe berm and low-height gabion basket retaining wall at toe of slide area, installation of three gavel-backfilled finger drains, and reconstruction of slope/slide area with coarse gravelly fill and shot rock (sedimentary rock, conglomerate, and shale) from a nearby quarry.	

ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress	X		Asphalt at edge of pavement undermined and breaking off along slide backscarp.	X	
Slope Movement	X		Some retrogression of slide to edge of pavement since 2021 inspection.	X	
Erosion	X		Erosion of slide area ongoing due to surface water flow over edge of pavement.	X	
Seepage		X	No seepage observed. Slide area dry.		X
Culvert Distress		X	No culverts or drain outlets observed by KCB.		X

COMMENTS
It is our understanding that the initial slide occurred in 1999 and the current slide occurred in 2020. The slope to the east of the current slide area could fail in the future.
2002 repair appears to have addressed the 1999 slide area.
Mechanism for initial slide could be a high-water table in the sliver fill due to periods of seasonally high groundwater (possibly discharging into the natural slope and sliver fill from or on top of bedrock).
Material, including sand and gravel, eroded from the slope/slide area observed along the flow path from the bottom of the slide to the edge of Grande Cache Lake.
Approximate 2-m trail at toe of slide area used for the Great Canadian Death Race.

Maintenance/Repair/Monitoring Recommendations:

- Request for Quotation (RFQ) prepared and issued in May 2023, and Environmental Overview Assessment (EOA) underway. Repair consists of excavation/removal of slide mass, reconstruction of slope/slide area with granular fill, installation of three buried subdrains (perforated pipe) in granular fill, and construction of a bench/toe berm and low-height gabion basket retaining wall at toe of slide area.
- Additional work should be considered to reduce the possibility of the slope to the north of the current slide area from failing in the future, including redirecting surface water flow from the highway away from the slope.

This report is an instrument of service of Klohn Crippen Berger (KCB). The report has been prepared for the exclusive use of Alberta Transportation (Client) for the specific application to the Peace Region (Grande Prairie District – South) Geohazard Risk Management Program (Contract No. CON0022166) 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.
- (iii) The report is based on information provided to KCB by the Client or by other parties on behalf of the client (Client-supplied information). KCB has not verified the correctness or accuracy of such information and makes no representations regarding its correctness or accuracy. KCB shall not be responsible to the Client for the consequences of any error or omission contained in Client-supplied information.
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- (v) This report is electronically signed and sealed and its electronic form is considered the original. A printed version of the original can be relied upon as a true copy when supplied by the author or when printed from its original electronic file.

Courtney Mulhall, M.Sc., P.Eng.
Geotechnical Engineer

Inspection Photographs

- Photo 1** Slide and erosion area adjacent to previously repaired section on south side of Hwy 40:34. Note scarp at pavement edge and Grande Cache Lake at toe of slope. Photo taken June 13, 2023, facing southwest.



- Photo 2** Slide and erosion area adjacent to previously repaired section on south side of Hwy 40:34. Note scarp at pavement edge. Photo taken June 13, 2023, facing northeast.



Photo 3 Section of site previously repaired in 2002 on south side of Hwy 40:34. Note trail at toe of highway embankment. Photo taken June 13, 2023, facing northwest.



Photo 4 Slide and erosion area adjacent to previously repaired section on south side of Hwy 40:34. Photo taken June 13, 2023, facing northwest.

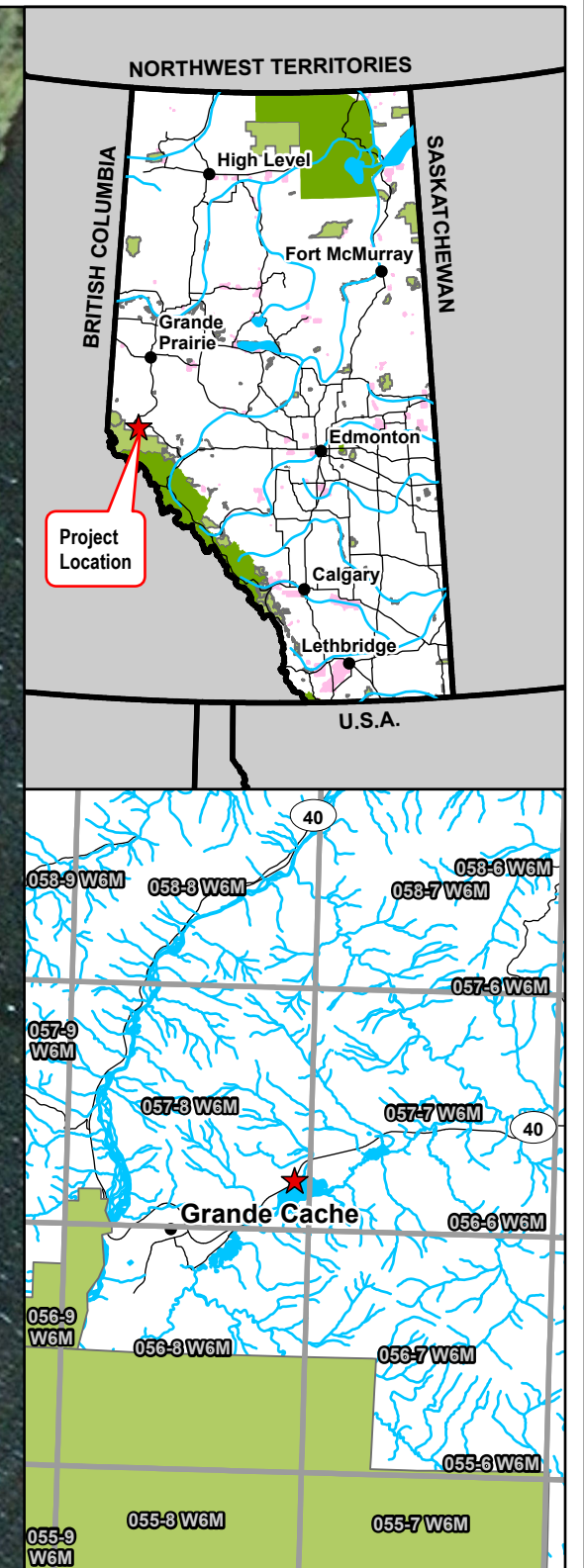


Photo 5 Material, including sand and gravel, eroded from slope/slide area in flow path from bottom of slide to edge of Grande Cache Lake. Photo taken June 13, 2023, facing northwest.



Photo 6 Highway embankment slope to east of current slide area on south side of Hwy 40:34. Photo taken June 13, 2023, facing north.





Legend

- GPS Track (June 12, 2023)
- - - 2002 Slide Repair Area
- - - New Slide Area
- Guardrail



NOTES:
 1. HORIZONTAL DATUM: NAD83
 2. GRID ZONE: UTM ZONE 11N
 3. IMAGE SOURCE: 2023 MICROSOFT CORPORATION,
 2023 MAXAR CNES, DISTRIBUTION AIRBUS DS

CLIENT

Klohn Crippen Berger

PROJECT
 PEACE REGION (GRANDE PRAIRIE DISTRICT-SOUTH)
 GEOHAZARD RISK MANAGEMENT PROGRAM

TITLE
 Site Plan
 GP017 - Grande Cache Lake Slide
 Hwy 40:34, km 26.680

SCALE 1:1,500 PROJECT No. A05116A01 FIG No. 1

File: \\int.kohn.com\ProjData\A\EDM\A05116A01\ABT Grande Prairie South GRMP\401 Drawings\GIS\WXD\2023\Section B\ABT_GPSouth_SectionB_230619.aprx Date: Time: Creator: aharrison