**PEACE REGION**
**(GRANDE PRAIRIE DISTRICT – SOUTH) GRMP**
**SITE INSPECTION FORM**

| SITE NUMBER AND NAME: **GP008 Road Surface Slumping (2.5 km North of McIntyre Mine)** | HIGHWAY & KM: 40:36, 16.365 and 17.139 | PREVIOUS INSPECTION DATE: June 10, 2024 | INSPECTION DATE: **June 2, 2025** |
|---|---|---|---|

| LEGAL DESCRIPTION: | NAD 83 COORDINATES: UTM | Northing | Easting | RISK ASSESSMENT: |
|---|---|---|---|---|
| SE 15-58-08-W6M | 11 | 5986982 | 362802 | **West Slide:** PF: 8 CF: 4 TOTAL: 32 |
| SW 14-58-08-W6M | 11 | 5987018 | 363134 | **Middle Slide:** PF: 8 CF: 4 TOTAL: 32 |
| SW 14-58-08-W6M | 11 | 5987028 | 363196 | **East Slide:** PF: 8 CF: 5 TOTAL: 40 |
| NW 14-58-08-W6M | 11 | 5987195 | 363778 | **ATCO Slide:** PF: 1 CF: 4 TOTAL: 4 |

| AVERAGE ANNUAL DAILY TRAFFIC (AADT): | CONTRACT MAINTENANCE AREA (CMA): |
|---|---|
| 840 (east) & 840 (west) (Reference No. 70000788, 2024) | 504 |

| SUMMARY OF SITE INSTRUMENTATION: | INSPECTED BY: |
|---|---|
| Operable: Three slope inclinometer (SIs) and two pneumatic piezometers (PNs) installed in 2004 at west slide. No instruments installed at other slides.<br><br>Inoperable: One PN installed in 2004.<br><br>LAST READING DATE: June 3, 2025. | Chris Gräpel (KCB)<br>Courtney Mulhall (KCB)<br>Babatunde Awokunle (TEC)<br>Rocky Wang (TEC) |

PRIMARY SITE ISSUE:

At west side of site, three slides/slope failures in a possible mine-waste fill/dump below Hwy 40:36: west slide cuts diagonally across highway, middle slide confined to northbound lane and shoulder, and east slide encompasses both lanes of Hwy 40:36. Herein referred to as the original three slides.

At east side of site, a repaired shallow slide (ATCO slide, which was added to GP008 site in 2022) was triggered by temporary bench construction for powerline work and affected northbound lane of Hwy 40:36. Slide repaired in 2024.

The site is located along the west valley slope of the Smoky River near the former McIntyre Mine (now CST Canada Coal Ltd.). In 2022, previous rockfall component of this site was separated into its own GRMP site (GP053).

APPROXIMATE DIMENSIONS:

West/middle/east slides: Slope appears to be approximately 30 m high and could be an old mine-waste fill/dump that predates highway construction. West, middle, and east slides at pavement surface approximately 140 m, 15 m, and 60 m wide, respectively.

ATCO slide: Repaired slide was approximately 20 m wide and extended approximately 20 m from guardrail down to bench with an approximate slope angle of 2.5H:1V. The bench was approximately 20 m wide and 6 m deep (parallel and perpendicular to highway, respectively) with a near-vertical backslope.

DATE OF ANY REMEDIAL ACTION: Ongoing patching and paving. 2024 – ATCO Slide excavated and slope, including bench, re-constructed with geogrid-reinforced granular fill with three perforated drainpipes at the base.

| **ITEM** | **CONDITION EXISTS** | | **DESCRIPTION AND LOCATION** | **NOTICABLE CHANGE FROM LAST INSPECTION** | |
|---|---|---|---|---|---|
| | YES | NO | | YES | NO |
| Pavement Distress | X | | Cracking and subtle dips in pavement surface at three original slides but similar to 2024 inspection. Some cracking and pavement distress remains at ATCO slide from before and during construction. | | X |

| | | | | | |
|---|---|---|---|---|---|
| Slope Movement | X | | Four slides as described above. At original three slides: Cracking in recent pavement patch indicates ongoing slide movements. SI movement rates slow (overall less than 2 mm/year). Subtle changes in slope grading near bushes at northern slide could indicate a toe bulge. At ATCO slide: No visual indications of instability observed on repaired slope. | | X |
| Erosion | | X | Some minor erosion along south side of ATCO slide repair. | | X |
| Seepage | | X | None observed at time of 2025 inspection. Drainpipe outlets at ATCO slide dry. | | X |
| Culvert Distress | X | | Culvert inlets crushed and/or partially blocked by rockfall particles in north highway ditch, see GP053 inspection report. | | X |

**COMMENTS**

TEC previously mentioned that pavement cracks from west, middle, and east slide zones usually reflect though pavement patches very quickly.

West Slide (Photos 1 and 2):

- Cracking extends across both lanes of the highway. Guardrail tips slightly to south (downslope).
- There appears to be a subtle dip or low spot in the pavement surface just west of the slide, mostly notably in the northbound lane.

Middle Slide (Photos 3 and 4):

- Pavement cracking and subtle dip at the middle slide is about 15 m wide with a roughly circular pattern that extends from the highway centerline to the northbound shoulder. The width of the slide as indicated by pavement cracking does not appear to indicate a large failure that extends far down the slope. The surface of the slope below the middle slide appears to be stable with the possibility of a toe bulge approximately 10 m downslope in the bushes that could also be a remnant from poor slope grading.
- Material exposed on slope below middle slide appears to be mine-waste material and could be from a former mine-waste fill/dump that predates highway construction. There is several meters distance between the guardrail and the crest of the slope which could also indicate a former mine waste structure as opposed to a highway embankment fill. Mine-waste dumps are typically built-in thick lifts with minimal compaction by end dumping with haul trucks. Settlements of the embankment could occur with time that might explain the movements at the western site limits, as would sliding of the waste dump slopes on thin sloping layers of segregated and/or fine-grained waste-dump materials that become preferential drainage paths.

East Slide (Photos 5 and 6):

- Cracking extends across both lanes of the highway with a subtle dip in the northbound lane. Pieces of pavement missing along one crack that extends roughly perpendicular across the highway (Photo 5).
- Brake marks observed in the southbound lane near the blue-hazard-diamond sign.

ATCO Slide (Photos 7 to 12) (WP049):

- ATCO constructed a bench for powerline work on the downslope/east side of the highway embankment. The bench was constructed using a cut and sliver fill method, resulting in an over-steepened backslope and fill slope that led to the slide above the bench. Slides movements resulted in pavement cracking near the shoulder of the northbound lane and a dip in the pavement surface. The slide was repaired in 2024.
- Observations made during the 2025 inspection:

- No visual indications of instability on the repaired slope (Photos 9 and 10). Movements appear to have slowed since repair work was completed in 2024.
- Vegetation (mostly weeks) is beginning to re-establish on the repaired slope (Photos 9 and 10) and access areas.
- Some minor erosion has occurred along the south side of the repaired slope (Photo 11).
- Drain outlets at the toe of the repaired slope were dry (Photo 12).

Maintenance/Repair/Monitoring Recommendations:

- All subsites should continue to be inspected by the Maintenance Contract Inspector (MCI). However, based on the slow movement recorded and observed at the original three slides and the performance of the repairs at the ATCO slide, so far, TEC could consider making the site a monitoring only site or removing the site from the list of active GRMP sites and excluding it from GP South GRMP Section B inspections. If site conditions were to deteriorate, the site could always be returned to the list of active GRMP sites and/or inspected again as part of a Section B inspection or Section D call-out inspection.
- TEC should consider patching the pavement at the four slide locations.




2025 Oct. 15
ID#153449

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

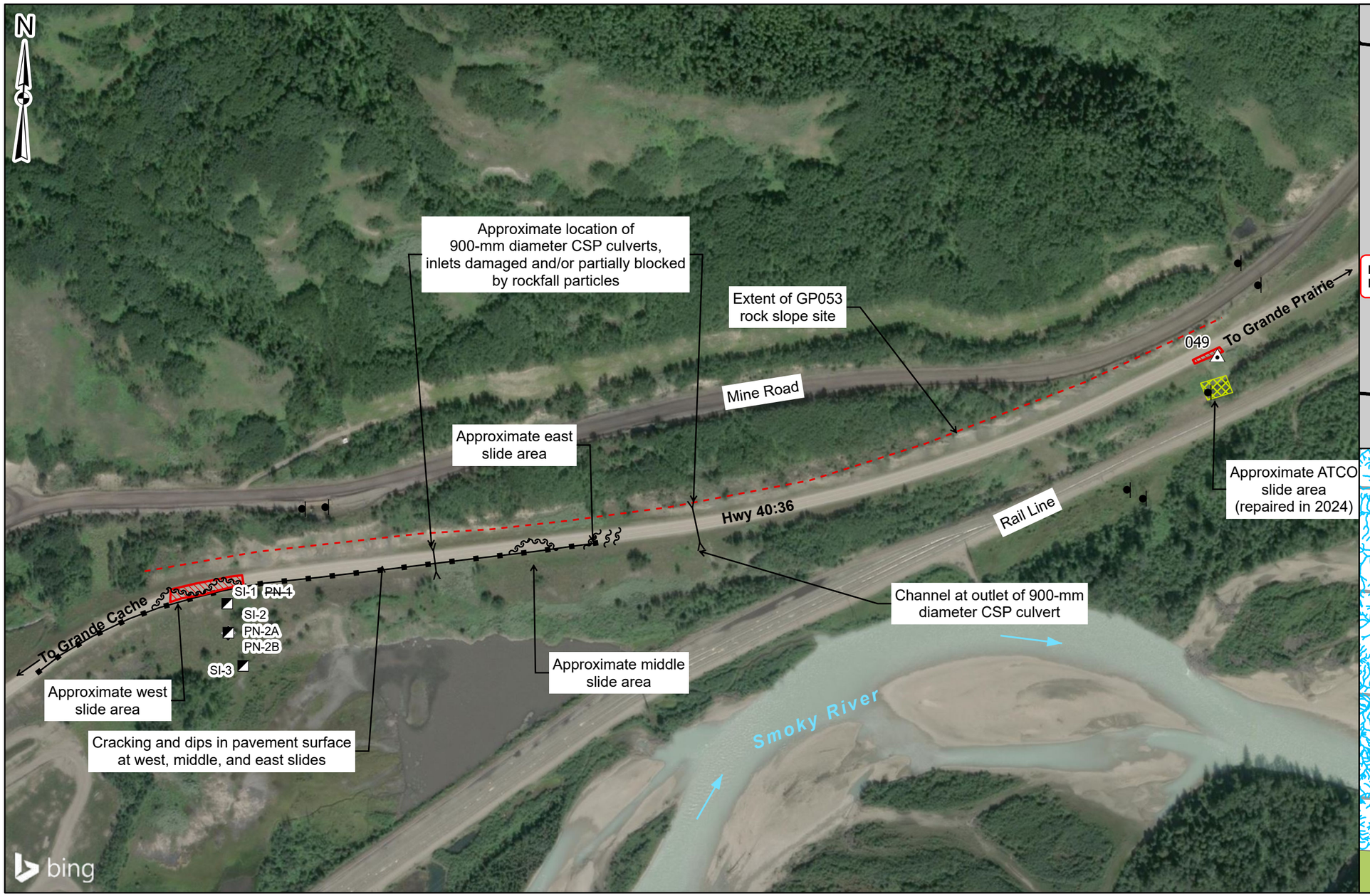
**PERMIT TO PRACTICE**
**KLOHN CRIPPEN BERGER LTD.**

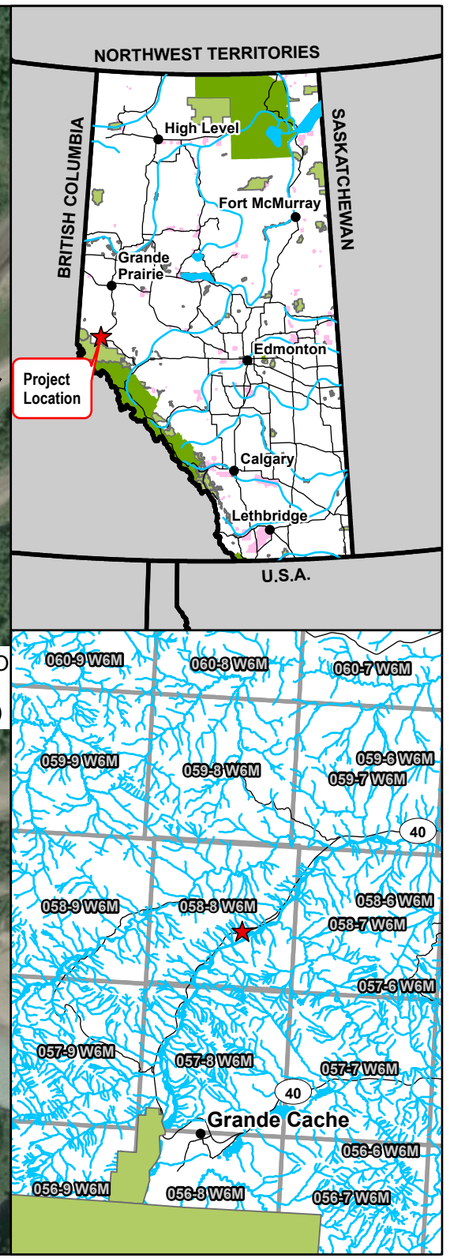
RM SIGNATURE: Pamela Jones

RM APEGA ID #: 187607

DATE: 15 Oct. 2025

**PERMIT NUMBER: P009196**
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)




## Legend

- GPS Waypoint (June 02, 2025)
- Powerpole
- Pneumatic Piezometer
- Slope Inclinometer
- Flow Direction
- Rockfall Corridor
- Guardrail
- Culvert
- ATCO Slide Area
- Pavement Patch

0 150 Metres

NOTES:
1. HORIZONTAL DATUM: NAD83
2. GRID ZONE: UTM ZONE 11N
3. IMAGE SOURCE: 2025 MICROSOFT CORPORATION, 2025 MAXAR CNES, DISTRIBUTION AIRBUS DS
4. STRIKETHROUGH INDICATES INSTRUMENT IS INOPERABLE. INSTRUMENT LOCATIONS APPROXIMATE. PRIOR TO 2021 MAY NOT BE SHOWN

CLIENT: Alberta

Klohn Crippen Berger

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

TITLE: Site Plan
GP008 - Road Surface Slumping
(2.5 km North of McIntyre Mine)
Hwy 40:36, km 16.365 and 17.139

| SCALE | PROJECT No. | FIG No. |
|---|---|---|
| 1:4,000 | A05116A01 | 1 |

File: Z:\AEDM\A05116A01 ABT Grande Prairie South GRMP\400 Drawings\GIS\MXD\2025\Section B\GIS2AT_GPSouth_SectionB_250703.aprx Date: Time: Creator: : HManandyan

# Inspection Photographs

**Photo 1** **Cracking and dip in pavement surface of Hwy 40:36 at west slide area. Photos taken June 2, 2025, facing southeast and southwest, respectively.**

**Photo 2** **Slope on south side of Hwy 40:36 at west slide area. Photos taken June 2, 2025, facing southeast and southwest, respectively.**

**Photo 3** **Cracking and dip in pavement surface of Hwy 40:36 at middle slide area. Photo taken June 2, 2025, facing southwest.**

**Photo 4** **Slope on south side of Hwy 40:36 at middle slide area. Photos taken June 2, 2025, facing southeast and southwest, respectively.**

**Photo 5** **Cracking and dip in pavement surface of Hwy 40:36 at east slide area. Photos taken June 2, 2025 facing northwest and southwest, respectively.**

**Photo 6** **Slope on south side of Hwy 40:36 at east slide area. Photos taken June 2, 2025, facing southeast and southwest, respectively.**

**Photo 7** **Repaired ATCO slide. UAV photo taken June 26, 2024, facing northeast.**

**Photo 8** **Pavement surface of Hwy 40:36 at repaired ATCO slide. Photos taken June 2, 2025, facing northwest and northeast, respectively.**

**Photo 9** **Repaired ATCO slide. Photo taken June 2, 2025, facing southeast.**

**Photo 10** **Repaired ATCO slide. Photo taken June 2, 2025, facing northwest.**

**Photo 11** **Erosion along west side of ATCO slide repair. Photo taken June 2, 2025, facing northwest.**

**Photo 12** **Slope between repaired ATCO slide and rail line. Note outlet of drainpipe (circled in white) installed in 2024 to convey flow from within the slide zone. Photos taken June 2, 2025, facing southeast and southwest, respectively.**