

**ALBERTA TRANSPORTATION  
GEOHAZARD ASSESSMENT PROGRAM  
PEACE REGION – GRANDE PRAIRIE DISTRICT  
2020 CALLOUT**

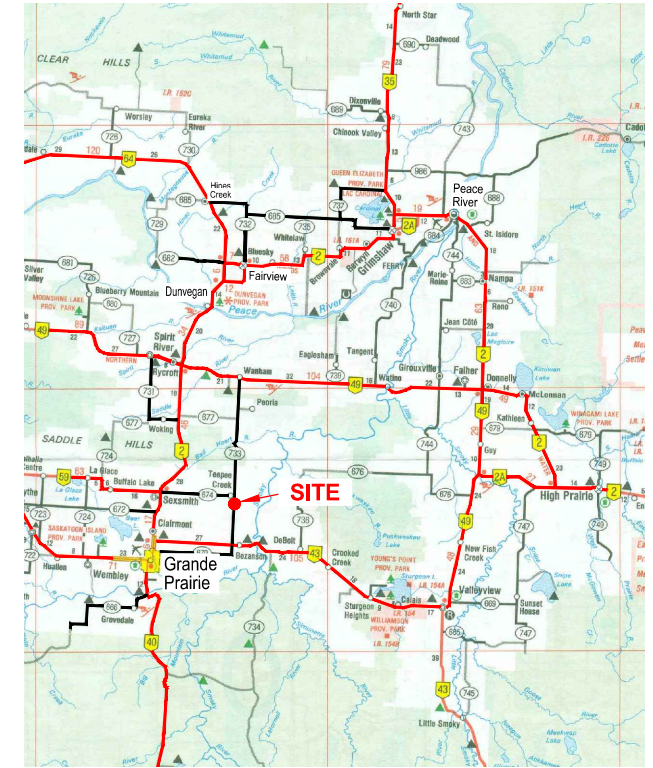
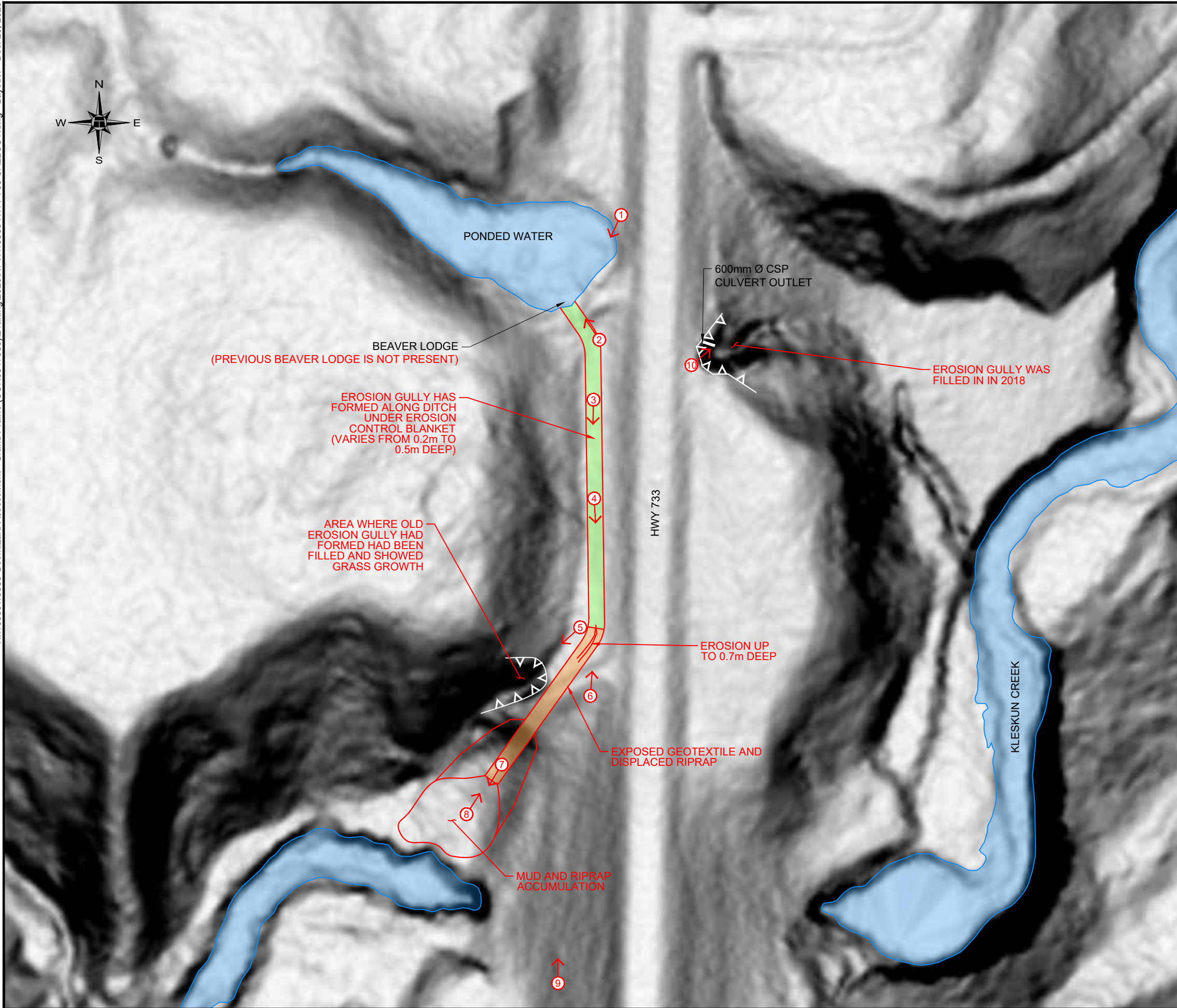


|                          |                      |                                  |            |           |
|--------------------------|----------------------|----------------------------------|------------|-----------|
| <b>Site Number</b>       | <b>Location</b>      | <b>Name</b>                      | <b>Hwy</b> | <b>km</b> |
| Call Out 733:02          | NW of Grande Prairie | Kleskun Creek                    | 733:02     | 14.5      |
| <b>Legal Description</b> |                      | <b>UTM Co-ordinates (NAD 83)</b> |            |           |
| SE33-73-3-W6             |                      | 11U N 6,135,958                  | E 412,202  |           |

|                             |  |           |              |                         |
|-----------------------------|--|-----------|--------------|-------------------------|
|                             | <b>Date</b>  | <b>PF</b> | <b>CF</b>    | <b>Total</b>            |
| <b>Previous Inspection:</b> | June 13, 2017  | 10        | 2            | 20 (Erosion Risk Scale) |
| <b>Current Inspection:</b>  | May 28, 2020   | 11        | 4            | 44 (Erosion Risk Scale) |
| <b>Road AADT:</b>           | 880  |           | <b>Year:</b> | 2019                    |
| <b>Inspected By:</b>        | Don Proudfoot, Nicole Wilder (Thurber)<br>Ed Szmata, Rishi Adhikari (TRANS)  |           |              |                         |
| <b>Report Attachments:</b>  | <input checked="" type="checkbox"/> Photographs <input checked="" type="checkbox"/> Plans <input type="checkbox"/> Maintenance Items |           |              |                         |

|   |  |                                     |  |
|---|--|-------------------------------------|--|
| <b>Primary Site Issue:</b>                            | The original issue was two erosion areas, one on either side of the highway which had retrogressed towards the highway and created major erosion gullies. The area on the east side of the highway remains in similar condition as after it was repaired. The erosion gullies were repaired by the maintenance contractor in 2018; however, the erosion has reoccurred on the west side of the highway with an erosion channel paralleling the highway and becomes worst near the area where it was previously repaired. |                                     |  |
| <b>Dimensions:</b>                                    | The erosion on the east side of the highway was about 15 m wide and ~35 m long to the toe on the east side of the highway; but was filled in in 2018. The erosion that has reoccurred on the west side of the highway is approximately 1 m wide and about 80 m long then widens to about 12 m wide further south where debris has accumulated near Kleskun Creek about 70 m in length diagonally from the highway.   |                                     |  |
| <b>Date of any remediation:</b>                       | In 2018 the maintenance contractor had lined the west ditch with straw and coconut matting from the ponded water to the north to where the erosion was the worse previously, then filled in the erosion gully by constructed a swale, placed non-woven geotextile and round rock rip rap along the swale down towards the creek to armour the swale. The erosion on the east side of the highway had been filled in and seeded.  |                                     |  |
| <b>Maintenance:</b>                                   |  |                                     |  |
| <b>Observations:</b>                                  | <b>Description</b>   | <b>Worse?</b>                       |  |
| <input checked="" type="checkbox"/> Pavement Distress | There are several patched cracks in the road that don't appear to be related to the erosion.   | <input type="checkbox"/>            |  |
| <input type="checkbox"/> Slope Movement               |  | <input type="checkbox"/>            |  |
| <input checked="" type="checkbox"/> Erosion           | Erosion has reoccurred within the remediated area on the west side of the highway following a high spring snow melt runoff event. The southwest ditch has been undermined below the straw and coconut matting and runoff has eroded the rip rap swale and exposed the non-woven geotextile in some areas with mud and riprap debris accumulating near the toe of the highway embankment adject to the creek. The previous erosion gully on the northeast appeared in good condition since the repair.                    | <input checked="" type="checkbox"/> |  |
| <input checked="" type="checkbox"/> Seepage           | Water was slightly flowing and ponding in some low lying areas of the west highway ditch and the soil at the toe   | <input checked="" type="checkbox"/> |  |

|  |   |                          |
|--|---|--------------------------|
|  | was wet. There were signs of high river water marks up the side hill embankment from high precipitation/runoff events as marked by a stake labelled April 21, 2020 high water level |                          |
| <input checked="" type="checkbox"/> Bridge/Culvert Distress  | The 600-mm diameter CSP observed in the northeast erosion gully did not appear to be blocked, but the outlet is now overhanging the erosion gully with no support.                  | <input type="checkbox"/> |
| <input type="checkbox"/> Other   |   | <input type="checkbox"/> |
| <b>Instrumentation:</b> None   |   |                          |
| <b>Assessment:</b>   |   |                          |
| <p>There were two erosion gullies on either side of the highway just north of Kleskun creek that were repaired by the maintenance contractor. Flow to the east side gully used to be via a 600 mm dia. CSP centreline pipe until the inlet was blocked off and the gully backfilled. During the 2020 visit, the east side appeared to be mostly grown over and there were no signs of retrogression towards the highway in 2020.</p> <p>The ditch paralleling the highway on the west side was lined with straw and coconut matting from the ponded water to the north to where the erosion gully was previously, then the erosion gully was repaired by placing fill, constructing a swale, placing non-woven geotextile and round rock rip rap along the swale down towards the creek. Thurber does not have details regarding the compaction of the material placed.</p> <p>The entire length of the west ditch has been affected by erosion. The straw/coconut matting on the flatter upslope reach has been undermined by erosion to a depth of 0.2 to 0.5 m. The top of the steeper reach, where the channel was lined with riprap over non-woven geotextile has also been eroded to a depth of about 0.7 m and a significant amount of riprap has been washed off the geotextile to accumulate with mud and silt at the toe of the embankment fill slope.</p> <p>It appears that there was a high runoff event in spring 2020 from a fast snow melt. Based on a stake the high flow occurred on April 21, 2020 the flow in Kleskun Creek ponded to a level of several meters above the inlet of the bridge file culvert that drains the creek under the highway.</p> <p>The repairs by the maintenance contractor diverted all of the overland flow that fed the pond, into the west ditch, including the portion that used to drain through the 600 mm dia. culvert, and this rapid flow was too much for the ditch to sustain without erosion. The riprap was also too round and small in size to handle the rapid flows down the steeper south portion of the ditch.</p> <p>The highway is not affected by the erosion yet, however, if not fixed, the erosion will likely get deeper and closer to the highway and could eventually impact the stability of the highway embankment slope. In addition the eroded clay from the ditch is being deposited directly into Kleskun Creek which is undesirable from an environmental point of view.</p> <p>The risk rating has been increased due to the recurrence of the erosion and proximity of eroded material to Kleskun Creek.</p> |   |                          |
| <b>Recommendations:</b>  |   |                          |
| <b>Investigation:</b>  |   |                          |
| <p>A hydrology study is recommended, to assess flows, and to determine the size of erosion resistant surfacing that is required in the west highway ditch. The base of the channel will need to be re-established with well compacted clay and it is likely that the ditch size will need to be enlarged and the ditch lined with hard armouring over its entire length. The upper flatter section could likely be lined with 0.23 m thick gabion mattress while the lower section would likely need to be lined with a series of stepped gabions or thicker anchored gabion mattress draining into a rock lined dissipation bowl.</p>   |   |                          |



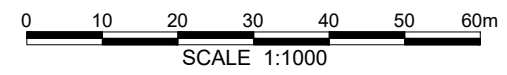
**SITE MAP**  
NOT TO SCALE

**LEGEND**

- DIRECTION AND NUMBER OF PHOTO
- DITCH LINED WITH EROSION CONTROL BLANKET (ECB)
- DITCH LINED WITH RIPRAP OVER NON-WOVEN GEOTEXTILE

**NOTES:**

1. FEATURE LOCATIONS ARE APPROXIMATE.



BASE PLAN PROVIDED BY ALBERTA TRANSPORTATION



**PEACE REGION (GRANDE PRAIRIE)**  
**CALLOUT: HWY 733:02 KLESKUN CREEK**

**MAY 28, 2020 CALLOUT PLAN**

**DWG No. 13353-HWY 733:02-1**

|             |               |
|-------------|---------------|
| DRAWN BY    | ML            |
| DESIGNED BY | NPW           |
| APPROVED BY | RVC           |
| SCALE       | 1:1000        |
| DATE        | DECEMBER 2020 |
| FILE No.    | 13353         |





**Photo 1.**  
Looking southwest  
at ponded water  
west of the  
roadway where  
there was  
previously a beaver  
lodge.



**Photo 2.**  
Looking northwest  
at upstream end of  
eroded channel.



**Photo 3.**  
Looking south at eroded ditch along straw and coconut matting in west ditch.



**Photo 4.**  
Looking south at erosion gully has undermined the straw and coconut matting in west ditch.



**Photo 5.**  
Looking southwest at point where flatter ditch lined with ECB meets the steeper ditch lined with rip rap. Not the extensive erosion at the curve transition.



**Photo 6.**  
Looking north at reinforced swale that was constructed during the 2018 repair which has been eroded and the non-woven geotextile has been exposed.



**Photo 7.**  
Looking southwest at the accumulation of mud and silt near the toe of the embankment slope above the creek.



**Photo 8.**  
Looking northeast at the swale and debris accumulation near the toe of the embankment slope. The grassed area to the left was where the previous erosion gully had been filled in.



**Photo 9.**  
Looking north at the swale and debris accumulation pile below the area that had the previous erosion gully filled in.



**Photo 10.**  
Looking northeast where the previous scarp had formed on the east side and was filled in in 2018.