

SITE NUMBER AND NAME: S044 Cow Creek Washouts		HIGHWAY & KM: 22:06, 11.745	PREVIOUS INSPECTION DATE: June 15, 2016	INSPECTION DATE: June 1, 2017
LEGAL DESCRIPTION: 04/05-35-008-02 W5M 09-34-008-02 W5M	NAD 83 COORDINATES: UTM Northing Easting 11 5507840 703272		RISK ASSESSMENT: PF: 11 CF: 4 TOTAL: 44	
AVERAGE ANNUAL DAILY TRAFFIC (AADT): 1425 (north), 1440 (south), (Ref No. 60220660)			CONTRACTOR MAINTENANCE AREA (CMA): 26	

SUMMARY OF SITE INSTRUMENTATION: None LAST READING DATE: n/a	INSPECTED BY: Chris Gräpel (KCB) Peter Roy (KCB) Ross Dickson (AT) Roger Skirrow (AT) Ammar Zaidi (TA)
PRIMARY SITE ISSUE: Creek erosion adjacent to highway.	
APPROXIMATE DIMENSIONS: Four erosion sites with near vertical erosion scarps 2 to 3 m high, between 10 and 20 m long. The four sites are located along an 800-m length of highway.	
DATE OF ANY REMEDIAL ACTION: Guardrails at Sites B and D installed 3 to 4 years ago.	

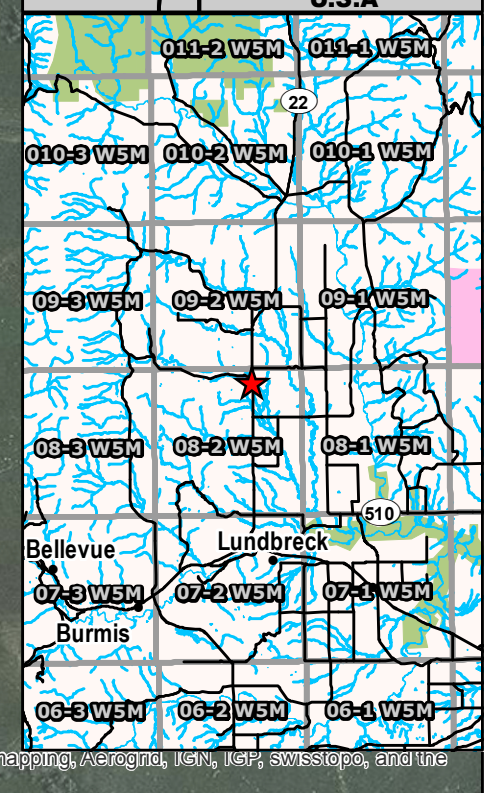
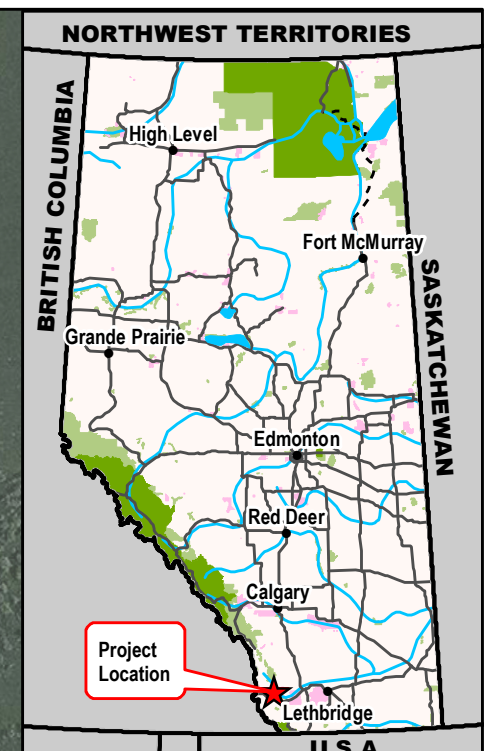
ITEM	CONDITION EXISTS		DESCRIPTION AND LOCATION	NOTICABLE CHANGE FROM LAST INSPECTION	
	YES	NO		YES	NO
Pavement Distress		X	Asphalt not affected by erosion sites		X
Slope Movement		X			X
Erosion	X		Retrogressing erosion scarps are approaching highway	X	
Seepage		X			X
Culvert Distress		X			X

COMMENTS					
Erosion scarps within as little as 3.2 m from edge of pavement at four different sites. Sites named as follows from north to south					
				<u>Attack Angle</u>	
Site D (west side of highway), waypoint 352 guard rail installed				80°	
Site C North, waypoint 351				130°	
Site C South, waypoint 350				155°	
Site B – guard rail installed, waypoint 347				115°	
Site A, waypoint 348				125°	
Exposed soils are moist silt and clay, some sand and gravel with occasional cobbles and boulders throughout.					
Cow Creek, in this reach, is a freely meandering stream in a wide silt-sand-gravel plain, showing cut-offs, ox-bow lakes, meander scars and point bars.					
All cut banks have high attack angles, gravel beds, scour hole formed, and erodible material in cut bank. With gravel/cobble beds significant changes to the bed and channel that only occurs during high energy runoff events.					
Main scarps from erosion have retrogressed into the ditch at Site A and B, but gully erosion between ditch and creek into creek has not started yet.					

The bridge sized culverts south of Site D are partially plugged with woody debris. The woody debris should be cleared by the maintenance contractor.

Utility cable exposed at Site A where erosion has retrogressed into ditch.

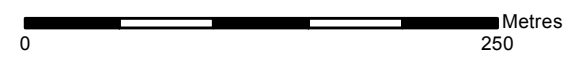
Design repair is underway to install sheet-pile walls at all five locations to stop creek erosion from reaching the highway. The top of the sheet-pile wall should be designed to be high water level. The design should specify the use of a driving spud that allows the top of the sheet pile wall to be installed to a depth below ground surface without requiring excavation. Fish survey conducted in creek in 2015 (fish observed in creek during 2016 inspection). A high-tension-cable barrier should be installed to reduce the chance of cars going over the edge of the erosion scarp at Sites A and C (north and south). Fisheries assessment and archaeological desktop study completed in early 2017. It is anticipated that construction will be completed prior to March 2018.



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Legend

- GPS Track (June 1, 2017)
- GPs Waypoints (June 1, 2017)



Time: 14:38:59 PM
Date: June 26, 2017
File: Z:\A\EDM\A05115A03\ABT Southern Region GRMP\A00 Drawings\2017\Section BIMXD\S044_170626.mxd

NOTES: 1. HORIZONTAL DATUM: NAD83 2. GRID ZONE: UTM Zone 12N 3. IMAGE SOURCE: World Imagery from ESRI ArcGIS Online. Image dated July 15, 2012	CLIENT 	PROJECT SOUTHERN REGION GEOHAZARD RISK MANAGEMENT PROGRAM
		TITLE Site Plan S044 - Cow Creek Hwy 22:06 km, 11.745
	SCALE 1:4,000	PROJECT No. A05115A03
		FIG No. 1

Photo 1 **Site D - edge of scarp 3.2 m from edge of pavement. Gravel bed and scour hole formed and erodible material in cut bank. Photo was taken facing north on June 1, 2017.**



Photo 2 **Site C (north) – Erosion has occurred in a side channel which had some ponded water at the time of inspection. Main channel 15 m to right of side channel. Gravel bed and scour hole formed and erodible material in cut bank. Photo was taken facing south on June 1, 2017.**



Photo 3 **Site C (south) - erosion scarp undermining fence. Gravel bed and scour hole formed and erodible material in cut bank. Photo was taken facing south on June 1, 2017.**



Photo 4 **Site B - erosion scarp undermining fence with retrogressing back scarp instability approaching ditch. Photo was taken facing north west on June 1, 2017.**



Photo 5 Site A - erosion scarp with retrogressing back scarp instability extending into ditch. Photo was taken facing south west on June 1, 2017.



Photo 5 Site A - erosion scarp undermining fence with retrogressing back scarp instability extending into ditch. Note orange-cased utility cable undermined by erosion. Photo was taken facing north east on June 1, 2017.

