DENE SURVEY SOLUTIONS

Indigenous-owned · Alberta · Calgary and Fort McMurray

VOLUME REPORT

Open-data sample · 2026-10-03

SW Calgary Ring Road at the Elbow River – earthwork change 2015 → 2020

Stoney Trail / Tsuut'ina Trail, Elbow River crossing and Glenmore Trail interchange, Calgary AB

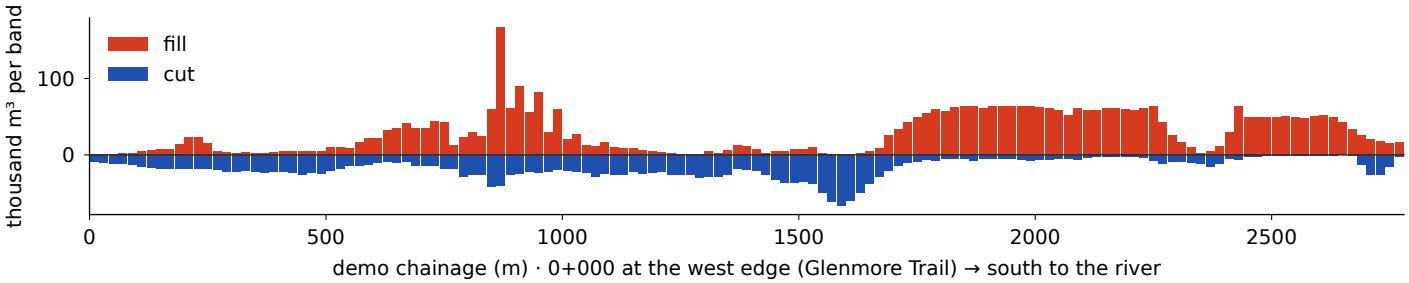
CUT	FILL	NET (fill − cut)
2,376,158 m³	3,948,872 m³	+1,572,714 m³

Existing surface	LiDAR bare-earth DTM flown 2015-10-02 (HRDEM project AB-Elbow_River, 1 m)
New surface	LiDAR bare-earth DTM flown 2020-10-03 (HRDEM project Calgary West 2020, 1 m)
Measured area	3.64 km²: the whole 1.4 × 2.6 km demo box
Method	Grid difference (DEM of difference), 1 m cells, cell-centre in area; changes within ±0.15 m excluded
Alignment	+0.025 m stable-ground offset removed (roads and bare flat ground; no tilt)
Datum	NAD83(CSRS) / UTM zone 11N (EPSG:2955), heights CGVD2013
Changed area	183.0 ha · deepest cut 15.6 m · highest fill 16.4 m

VOLUMES BY ZONE (north → south)

Zone	Cut m³	Fill m³	Net m³	Changed ha
1 · Glenmore / Sarcee interchange	796,495	1,142,334	+345,839	63.1
2 · North valley-wall cut	1,197,494	278,697	−918,797	48.0
3 · Elbow valley embankment	200,160	1,666,212	+1,466,052	38.7
4 · River crossing + south approach	182,008	861,628	+679,620	33.3
Total	**2,376,158**	**3,948,872**	**+1,572,714**	**183.0**

VOLUME BY CHAINAGE (20 m bands along the ring-road centreline)



QUALITY CHECKS

- Heights: 50 random points per survey, viewer heights vs the source HRDEM rasters: mean difference 4.7 mm (2015) and 4.0 mm (2020), largest 39 mm on steep slopes (resampling).
- Volumes recomputed independently from the source rasters, without reprojection: cut +0.08 %, fill +0.05 %, net +0.003 % against the reported figures.
- The web viewer's draw-an-area volume tool gives the same cut and fill as an independent numpy calculation on every zone and on the whole measured area.

LIMITATIONS

- Open-data demonstration volumes. Not a legal survey; not for construction, design or payment. Legal and boundary surveys are referred to licensed land surveyors.
- Bare-earth models remove bridge decks (ground under decks is interpolated); in the river the surface is water level, so channel volumes mix excavation with water-level change. LiDAR density 5.3 pts/m² (2015) and 43 pts/m² (2020).

Interactive viewer with the same numbers: denesurveysolutions.ca/demo

Elevation: High Resolution Digital Elevation Model (HRDEM), CanElevation Series, Natural Resources Canada; source LiDAR "Elbow River" 2015 © Government of Alberta and "Calgary West 2020" © Airborne Imaging Inc. Roads: National Road Network, Statistics Canada. Contains information licensed under the Open Government Licence – Canada (open.canada.ca/en/open-government-licence-canada). Not an official product; not endorsed by the Government of Canada, the Government of Alberta or the Tsuut'ina Nation.