**Appendix A:** Summary of potential gully conditioning features and their class values for each thematic map of the training area (Koka upstream sub-basin)

|  |  |  |  |
| --- | --- | --- | --- |
| Features | Class values | Features | Class values |
| Slope angle (°) | < 5  5-10,  10-20  20-30  30-40  >40 | Elevation (meter) | < 1700  1700 – 1900  1900 – 2100  2100 – 2300  > 2300 |
| Slope aspect\* | Flat  N  NE  E  SE  S  SW  W  NW | land use/land cover  (LULC)\* | Bare lands  Built-up areas Cultivated lands Forest  Grasslands  Shrubs  Water bodies |
| Lithology\* | Volcanic Ash (Tuff)  Silicic  Extrusive volcanic  Colluvium  Alluvium-Fluvial  Alluvium-others | Soil texture\* | Clay (heavy)  Silt Clay Loam  Silt  Silt Loam  Loam |
| Landform\* | Smooth plain  Irregular plain  Escarpment  Hills  Breaks/foothills  Low Mountain  High mountain | Distance to stream (m) | < 600  600 – 1300  1300 – 2200  2200 – 3500  > 3500 |
| Distance to road (m) | < 100  100 – 500  500 – 1500  1500 – 2500  > 2500 | Drainage density (km/km2) | Min = 0  Median = 0.1802  Max = 0.7063 |
| Plan curvature (rad−1) | Concave (< 0)  Flat (= 0)  Convex (> 0) | Profile Curvature (rad−1) | Max = 0.251  Median = -0.007  Min = -0.328 |
| SPI | Max = 11.49788  Median = 0.5709  Min = 0.06837 | EVI | Max = 0.57118  Median = 0.1831  Min = 8.338 |
| MSAVI | Max = 0.38011  Median = 0.13482  Min = 0.01194 | TWI | Max = 27.416  Median = 10.795  Min = 7.674 |

\*categorical variables