

Assignment of Curve Numbers to Land Use

It is necessary to develop “lookup tables” which associate a curve number with a given combination of land use and soil type. In GISHydro2000, there are several such tables depending on the particular combination of land use and hydrologic condition being considered. The following table shows the lookup table’s names:

Lookup Table Used	Hydrologic Condition	Land Use
andlookupfair.txt	fair	MOP or Ragan
andlookupgood.txt	good	MOP or Ragan
usgslookupfair.txt	fair	USGS
usgslookupgood.txt	good	USGS
mrlclookupfair.txt	fair	MRLC
mrlclookupgood.txt	good	MRLC

Of particular concern are the curve numbers and assumed percent imperviousness associated with the urbanized land uses. The NRCS cites the following method for the development of curve numbers listed in their tables.

1. A typical degree of imperviousness is assigned to each urban land use classification. The NRCS uses: {0.12, 0.20, 0.25, 0.30, 0.38} for residential lots of average size: {2 acre, 1 acre, 1/2 acre, 1/3 acre, 1/4 acres}, respectively and {0.65, 0.72, and 0.85} for {row houses, industrial, and commercial} land uses, respectively.
2. The impervious area is assigned a curve number of 98 regardless of underlying soil type while the remaining pervious area is assigned the same curve number as lawn in good hydrologic condition with curve numbers of {39, 61, 74, and 80} for {A, B, C, and D} soils, respectively.
3. The aggregate curve number for any of these land uses is then just the weighted average of the curve numbers for these two land use classifications resulting from the assumed degree of imperviousness.

The table that appears below gives the GISHydro2000 employed curve numbers and a comparison of the imperviousness assigned by both MOP and the NRCS for the various land uses:

NRCS Classification	NRCS Imperviousness	MOP Classification	MOP Imperviousness	MOP LUCode	Hydrologic Soil Group			
					A	B	C	D
Residential: 1/2 acre lots	0.25	Low dens. Res. (0.2 to 2 du/acre)	0.25	11	54	70	80	85
Residential: 1/4 acre lots	0.38	Medium dens. Res. (2 to 8 du/acre)	0.30	12	61	75	83	87
Row houses/ Town houses	0.65	High dens. Res. (>8 du/acre)	0.65	13	77	85	90	92
Commercial	0.85	Commercial	0.82	14	89	92	94	95
Industrial	0.72	Industrial	0.70	15	89	92	94	95
Institutional	n/a	Institutional	0.5	16	81	88	91	93
Newly graded area	n/a	Extractive	0.11	17	77	86	91	94
Lawn: fair condition	n/a	Open Urban Land	0.11	18	49	69	79	84