

# **2002 Summary of Annual Precipitation for the SEMCOG Recording Rain Gauge Network**

Annual precipitation totals over the SEMCOG network during 2002 ranged from a high of 35.31 inches at M-03 on southeastern Macomb County to a low of 18.80 inches at O-07, in central Oakland County (Figure 1 and Tables 1 and 3). Only seven additional gauges recorded more than 30 inches — one in south-central Oakland County (30.22 inches at O-24); one in east-central Washtenaw County (33.03 inches at A-05); two in east-central and southeast Wayne County (31.91 inches at W-45 and 30.91 inches at W-35, respectively); and three in northern Macomb County (31.05 inches at M-12; 30.48 inches at M-08; and 30.39 inches at M-01). The regions of lowest amounts (i.e., less than 24 inches) included east-central Macomb County; the southwest to northeast central area of Oakland County; and the southern third of Livingston County, as well as an adjacent area of Washtenaw County.

Departures of 2002 annual precipitation amounts from long-term median amounts for stations in the network with more than 15 years of record through 2000 (Figure 2) were almost all below the median. Only five locations recorded above-median amounts. Values ranged from above-median 2.55 inches at A-05 in east-central Washtenaw County and 0.65 inches at M-03 in southeast Macomb County to below-median values of 11.95 inches at O-07 in central Oakland County and 11.94 inches at O-28 in southwest Oakland County. Almost all of Livingston and Oakland Counties, as well as approximately the southern two-thirds of Macomb County, the northern half of Wayne County, and the northern third of Washtenaw County, were more than four inches below the median, with many stations recording more than eight inches below the median.

Figure 3 shows the percentile ranking of each station's annual total compared to historical data through 2000, based on a gamma probability distribution function. These map values represent the decimal fraction of years that total annual precipitation at that station would have been less than or equal to the 2002 amount. For example, the 0.8 isoline encloses all stations in the area where the annual amount would be less than or equal to that received in 2002 during eight years in 10. The complement of that value, .2, means that in only two years in 10 should a station be expected to record more rain than was recorded in 2002. Care must be used in interpreting such values, however, because of the relatively short periods-of-record (as short as 16 years) for some stations. The extremely dry conditions resulted in very low probabilities for many areas. As expected, only the four areas with positive departures from the median had probabilities greater than 0.50. The highest probability value was .71 at A-05, while the other values were only in the range of 0.50 to 0.54, i.e., near normal. Most of the region had probability values of 0.30 or lower. The extreme low values were in southeastern Livingston and southwestern Oakland Counties, where calculated values were less than 0.005. A large region surrounding this area and extending from southeastern Livingston County through northeastern Oakland County, as well as southern Macomb County and two nearby stations in Wayne County, had values less than 0.05 (i.e., less than one in 20 years).

The network area was much drier in 2002, compared to 2001 (Figure 4). Only W-35 (+1.88") in southeast Wayne County was nearly two inches wetter than in 2001; the greatest changes from 2001 were recorded in south-central Livingston and southwest-to-northeast Oakland Counties where changes were more than 12 inches below the 2001 values. The extreme changes were -15.80 inches at O-26; -15.53 inches at O-13; and -15.26 inches at L-10. Most areas north of an east-west line through central Washtenaw and Wayne Counties were more than six inches drier than in 2001.

In summary, 2002 was a very dry year for the residents for the five-county area, the difference being even more noticeable following the relatively wet year of 2001.